Draft Environmental Assessment

John Law Ditch Flood Mitigation Project

Town of Windsor, Colorado

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FEMA

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FEMA Reviewers, please NOTE:

The attached document is a <u>Draft</u>: This document is intended to be a working document for FEMA review. We anticipate comments and encourage your feedback on all aspects of the report.

Tables

Appendices

Acronyms and Abbreviations

APE	Area of Potential Effect
BMPs	Best Management Practices
CDPHE	Colorado Department of Public Health and Environment
CDWR	Colorado Division of Water Resources
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CPW	Colorado Parks and Wildlife
CSU	Colorado State University
CY	cubic yard
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
EO	Executive Order
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
LOMR	Letter of Map Revision
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act
MOA	Memorandum of Agreement
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PDM	Pre-Disaster Mitigation
PL	Public Law
SH 392	State Highway 392
SHPO	State Historic Preservation Officer
UNCC	Utility Notification Center of Colorado
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USCB	United States Census Bureau
USDA	United States Department of Agriculture

USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WCR 21	Weld County Road 21
WOUS	Water of the United States

SECTION ONE INTRODUCTION

1.1 BACKGROUND

The Town of Windsor, Colorado is located halfway between Greeley and Fort Collins in north-central Colorado, near the Front Range of the Rocky Mountains (**Appendix A, Exhibit 1**). The town was incorporated in 1890 and was historically an agricultural community with industry centered on sugar beets and sugar manufacturing. Today, Windsor leads the way for northern Colorado in attracting green industry. In addition to wind turbine blade production, the area supports ethanol production, a recycling facility, and other green industries. As a bedroom community for surrounding metropolitan areas, and due in part to a growing economy, Windsor has seen a dramatic growth, with the population nearly doubling between 2000 and 2008 (from 9,896 to 19,001 persons; Town of Windsor 2011).

Historic drainage patterns in the vicinity of Windsor, including what is known as Law Basin, have been altered by the construction of the Greeley Number 2 Canal and two major roads: Weld County Road 21 (WCR 21) and Colorado State Highway 392 (SH 392), which cross the basin. Irrigation water is routed through the John Law Ditch, which flows through the middle of Law Basin. The John Law Ditch is approximately 20 feet wide and 4 feet deep and does not have the capacity to convey the 2-year storm event (Town of Windsor 2011). **Appendix A, Exhibit 2** shows the project area and the relative location of the roads and ditches in the vicinity of the project. **Appendix B** provides photographs of the project area.

The floodplain associated with Law Basin was first delineated on a Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) for Weld County dated March 18, 1980 (Town of Windsor 2011). Since that time, a hydrologic and hydraulic study was completed for Law Basin as part of Letter of Map Revision (LOMR) Case No. 08-08-0233P. An updated FEMA FIRM is available for the project area (Weld County, Colorado, Unincorporated Areas; Panel Number 0802660605D, Revised September 27, 1991). The revised floodplain was determined to be more extensive than that shown on the 1991 FIRM and includes 10 residential structures and two roads at risk of flooding during low 2-year to 10-year events (50- to 10-percent-annual-risk of flooding, respectively). SH 392 has traffic counts of approximately 8,200 vehicles per day and is at risk of overtopping during relatively minor events (less than a 10-year event). SH 392 is a vital road in the project area and a major connector route between Greeley and Fort Collins. WCR 21 has traffic counts of 1,650 vehicles per day and is also at risk of overtopping during minor events (less than a 10-year event) (Town of Windsor 2011).

The Town of Windsor is applying for FEMA funding under Pre-Disaster Mitigation (PDM) Program Grant Application PDMC-PJ-08-CO-2011-003. Funding of flood hazard risk reduction projects by FEMA triggers the requirements of the National Environmental Policy Act (NEPA; 42 U.S. Code [U.S.C.] §§ 4321–4327), which includes an evaluation by Federal agencies of the potential environmental impacts of Proposed Actions and a consideration of those impacts during the decision making process. FEMA has therefore prepared this Environmental

Assessment (EA) in accordance with the Council on Environmental Quality (CEQ) NEPA implementing regulations (Title 40 Code of Federal Regulations [CFR] Parts 1500–1508) and FEMA's NEPA procedures (44 CFR Part 10).

SECTION TWO PURPOSE AND NEED

The Town of Windsor, through the Colorado Division of Emergency Management, has requested financial assistance from FEMA to implement mitigation measures to reduce the flood hazard associated with the John Law Ditch. The assistance would be provided under FEMA's PDM Program. The purpose of the PDM Program is to substantially reduce the risk of future damage, hardship, loss, or suffering in communities from natural disasters, such as floods, by providing the affected communities with cost-share funds for mitigation projects.

Based on the continuing risk of flooding, the Town of Windsor has identified the need to mitigate future flood events associated with the John Law Ditch east of Windsor near the intersection of WCR 21 and SH 392 by conveying stormwater runoff and flood flows without flooding residential properties and two roadways during floods up to and including a 10-year flood event. The primary need for the project is to reduce the flood risk to 10 residential properties and protect/maintain traffic flows on WCR 21 and SH 392 up to the 10-year storm event.

SECTION THREE ALTERNATIVES

3.1 ALTERNATIVES CONSIDERED AND DISMISSED

Alternatives that were considered but determined to not be feasible include upstream detention and acquisition/demolition of structures within the floodplain.

3.1.1 Upstream Detention

The upstream portions of the 29-square-mile drainage basin were investigated for opportunities to provide flood control storage. The Black Hallow irrigation reservoir was identified as a facility that could possibly provide flood control storage. A benefit-cost analysis was completed for this facility as part of a joint study between Windsor and the Town of Severance for identifying improvements in the Law Drainage Basin that would reduce flood risk and have a benefit-cost ratio equal to or greater than 1.0. The benefit-cost analysis determined that adding flood storage capacity to the existing reservoir was not cost effective. Therefore, this alternative was considered not feasible and not retained for further evaluation.

3.1.2 Acquisition and Demolition of Structures within the Floodplain

This alternative would involve the acquisition and demolition of structures within the existing 100-year floodplain. These properties would be purchased and the structures demolished, thus removing them from the floodplain. This alternative would reduce property damages associated with future flood events, as there would be no structures within the floodplain that could be inundated by flood waters. This alternative was considered to be cost prohibitive and would not address flooding of SH 392 and WCR 21. Therefore, this alternative does not meet the purpose and need for the project, was considered not feasible, and was therefore not retained for further evaluation.

3.2 ALTERNATIVES CONSIDERED

As required by NEPA, impacts from the No Action Alternative were considered. Alternative 2, the Proposed Action, consists of realigning and increasing the conveyance capacity of the John Law Ditch between WCR 21 and the Great Western Railway (Colorado & Southern Railroad) embankment.

3.2.1 Alternative 1 – No Action

The No Action Alternative provides a baseline for comparison in determining the potential environmental effects of the Proposed Action. Under the No Action Alternative, no modifications would be made to increase the conveyance capacity of the John Law Ditch.

3.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

The Proposed Action involves the installation of two sets of concrete box culverts in the John Law Ditch; the first set, twin 4-foot by 8-foot, 200-foot-long box culverts, would replace the existing box culverts at WCR 21. The second set consists of new twin 6-foot by 8-foot, 140-foot-long box culverts at SH 392. In addition, John Law Ditch would be deepened so flood flows associated with floods up to and including the 10-year flood event can be conveyed beneath Greeley Canal No. 2. Channel improvements would also be made to approximately 4,000 linear feet of John Law Ditch, including an approximately 1,700-foot section between WCR 21 and SH 392 and a 2,300-foot section between SH 392 and the Colorado & Southern Railroad embankment. The ditch would also be widened and realigned immediately upstream and downstream of SH 392 to improve stormwater conveyance. After the new segments are constructed, segments of the existing ditch would no longer be in the alignment of the modified ditch. These segments would be filled with soil excavated during modification of the ditch. It is estimated that 9,000 cubic yards (CY) of excavated soil would be needed to fill these segments. Once filled, these areas would be returned to agricultural use. The modified ditch would be approximately 100 feet wide and range in depth from 3 to 12 feet. Side slopes would be approximately 4 horizontal feet to 1 vertical foot (4:1). A low-flow channel, similar in size to the existing ditch, would be constructed in the bottom of the new channel. **Appendix A, Exhibit 3** shows a preliminary design plan and cross-section of the modified channel.

The existing channel connecting Greeley No. 2 Canal and John Law Ditch would be maintained; however, a new overflow spillway would be installed on the Greeley No. 2 Canal upstream of the canal's existing junction with WCR 21 and the John Law Ditch. The spillway would allow high flows in Greeley No. 2 Canal to spill into the reconfigured John Law Ditch. Other project features include the placement of riprap at the WCR 21 road crossing and downgradient of the new spillway, road repair following the installation of the box culverts, utility work in disturbed areas, installation of erosion control measures, revegetation of disturbed areas, and replacement of fencing removed during project activities.

The project would involve the acquisition and disturbance of approximately 12 acres of irrigated farmland from willing sellers. Approximately 52,000 CY of soil would be excavated to construct the modified channel. Topsoil would be stockpiled on site and replaced when construction activities are completed. Two potential stockpile areas have been identified. One stockpile area is located northwest of the project area and is privately owned. This property would be used to stockpile soil on a willing property owner basis. This area would be accessed from the area north of SH 392 using the right-of-way along the south side of Greeley No. 2 Canal. The second stockpile area is approximately 0.5 mile south of the Colorado & Southern Railroad embankment and is owned by the Town of Windsor. **Appendix A, Exhibit 4** shows the locations of the proposed stockpile areas. Approximately 9,000 CY of the 52,000 CY of excavated soil would be used to fill segments no longer included in the alignment of the modified ditch. It is estimated that approximately 43,000 CY of excess soil would be stockpiled at these areas.

Several staging areas would also be necessary for the project. Staging areas are used to store construction materials, the box culverts, and construction equipment during the construction of the project features. **Appendix A**, **Exhibit 4** shows the location of the proposed staging areas, which are located on cultivated cropland. These areas are either part of the 12 acres to be obtained from a willing seller or a temporary construction easement would be obtained from the landowner. **Appendix A, Exhibit 4** also shows the existing and proposed access roads associated with the project. No public roads would be accessed, and no temporary access road would need to be constructed to reach the stockpile areas. The northern stockpile area would be accessed by the existing access road associated with Greeley No. 2 Canal. To reach the southern stockpile area, trucks and other equipment would drive along the edge of the agricultural fields as shown in **Appendix A, Exhibit 4**. Therefore, no temporary haul roads would need to be constructed; however, a temporary railroad crossing would need to be constructed over the Colorado Southern & Railroad embankment. Additionally, a temporary culvert would be placed in the Law Ditch near the south stockpile area for crossing the ditch.

Best management practices (BMPs) would be used to control and minimize erosion during construction and until vegetation has been reestablished in the project area. BMPs would include straw wattles, silt fences, erosion control blankets, and dewatering of the channel prior to modification. The construction period is anticipated to be approximately 11 months. Post-project, the modified channel banks would be revegetated with native grasses. The vegetation along the channel banks would be burned off every spring and periodic mowing could occur.

SECTION FOUR AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section describes the existing conditions in the project area and the potential effects of the No Action Alternative and the Proposed Action on the human and natural environment.

4.1 PHYSICAL RESOURCES

The physical resources considered in this EA are soils, air quality and climate change, and visual resources. The proposed project does not have the potential to affect geology because construction activities will not be deep enough to affect bedrock; therefore, geological resources are not discussed in this EA.

4.1.1 Affected Environment

The project area is located in a rural area between Greeley and Fort Collins at the western edge of the Colorado plains.

4.1.1.1 Soils

Based on a search of the Natural Resources Conservation Service (NRCS) database (NRCS 2012), soils in the project area consist of Nunn clay loam (0 to 1 percent and 1 to 3 percent slopes). In general, this soil is deep, well-drained, and was formed in mixed alluvium. Permeability is slow and the soil is used almost entirely for irrigated crops (USDA 1980). Nunn clay loam soils are considered prime farmland when irrigated.

The Farmland Protection Policy Act (FPPA) was enacted in 1981 (Public Law [PL] 97-98) to minimize the unnecessary conversion of farmland to non-agricultural uses as a result of Federal actions. The FPPA also seeks to ensure Federal programs are administered in a manner that is compatible with State and local policies and programs that protect farmland. The NRCS protects significant agricultural lands from irreversible conversions that would result in the loss of an essential food and environmental resource, and has identified prime farmland as a significant agricultural resource that warrants protection.

The FPPA defines prime farmland as land that has the physical and chemical characteristics for producing food, feed, fiber, forage, and oilseed crops and is available for these uses. Prime farmland has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods (USDA 2012).The NRCS has developed a form, the Farmland Conversion Impact Rating Form AD-1006, which documents an evaluation process to assess a site's potential agricultural value and the effects of a Federal action that would convert prime farmland to other uses.

4.1.1.2 Air Quality and Climate Change

The National Ambient Air Quality Standards established by the U.S. Environmental Protection Agency (EPA) define the allowable concentrations of air pollutants that may be reached, but not exceeded, in a given period to protect human health (primary standards) and welfare (secondary standards) with a reasonable margin of safety. These standards include maximum concentrations of ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and particulate matter with a diameter of up to 10 microns.

The Colorado Department of Public Health and Environment (CDPHE), Air Pollution Control Division, is the primary authority for protecting air quality in Colorado under the Colorado Air Pollution Prevention and Control Act. Weld County, including Windsor and the project area, is a non-attainment area for 8-hour ozone (EPA 2012). Ozone is the primary component of smog. The 8-hour ozone standard is the surface ozone concentration backward averaged over 8 hours.

Additionally, the CEQ has recently released guidance on how Federal agencies should consider climate change in their decisions. CEQ guidance for NEPA documents suggests that quantitative analysis should be done if an action would release more than 25,000 metric tons of greenhouse gases per year (CEQ 2010).

4.1.1.3 Visual Resources

The project area is east of Windsor within agricultural fields. The surrounding area is primarily agricultural and rural with scattered farmsteads and residential properties. A sports complex and an industrial park are located south of the project area. **Appendix B** contains photographs of the project area.

4.1.2 Environmental Consequences

4.1.2.1 Alternative 1 – No Action

Soils

The No Action Alternative would have no direct effect on soils in the project area because no soil disturbance would occur. However, during future flood events, soil would continue to be displaced and re-deposited within the flood area. This is a common occurrence during floods; therefore, there would be no new impacts on soils with the No Action Alternative.

Air Quality and Climate Change

No construction activities would occur under the No Action Alternative. General maintenance of John Law Ditch and existing culverts would continue and would have no effect on air quality in the project or surrounding areas because no permanent emission source would be constructed and emissions associated with maintenance activities would be minor. The No Action Alternative

would have no effect on global climate change because maintenance activities would not generate detectable levels of greenhouse gases.

Visual Resources

The No Action Alternative would not change the current visual components of the project area and therefore would not affect the visual resources of the project area.

4.1.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

Soils

Approximately 52,000 CY of soil would be excavated to modify the John Law Ditch. Topsoil would be stockpiled on site and replaced when construction activities are complete. In total, approximately 12 acres of prime farmland soils would be permanently affected by the Proposed Action. Post-construction, these 12 acres would be seeded with native grass species, converting approximately 12 acres of farmland to drainage channel banks. Nunn clay loam is considered prime farmland when irrigated. Form AD-1006 (**Appendix C**) was completed, and the selected site scored a total of 159 points, which does not exceeded the allowable 260 points. Therefore, the Proposed Action would not adversely affect prime farmland in the project area, and no further coordination with the NRCS is required for this project.

There would be a long-term beneficial impact on soils in the vicinity of the project once re-vegetation is complete and established due to decreased soil erosion associated with flood events. Approximately 9,000 CY of excavated soil would be used to fill in the existing segments of the John Law Ditch that would not be included in the modified ditch. The remaining excavated soils (estimated at 43,000 CY) would be stockpiled at the identified stockpile areas.

To minimize potential soil erosion during construction activities, BMPs such as silt fences and/or straw wattles, erosion blankets, and channel dewatering, would be employed by the contractor until all disturbed areas are adequately revegetated or resurfaced.

Air Quality and Climate Change

The project area is located in a non-attainment area for 8-hour ozone. During implementation and construction of the project components, the Proposed Action would cause low levels of particulate matter (dust generated during construction) and vehicle exhaust emissions from construction vehicles. Both types of emissions would have a temporary minor impact on air quality in the local area.

No permanent sources of increased air emissions would be associated with the Proposed Action. When necessary, the contractor would be required to water down work areas to reduce dust levels.

Operation of the construction equipment would add to exhaust-related air pollutants, such as nitrogen oxide, carbon monoxide, and ozone, within the local area. Increased concentrations of

these air pollutants would be localized, temporary, and have a minor effect on local air quality. CDPHE was contacted regarding this project and stated that, because the expected construction period for the project is longer than 6 months, a State Air Pollution Permit would be required (personal communication between P. Rusher, CDPHE, and S. Volkmer, URS, April 17, 2012).

The Proposed Action would not result in a new point source or generate detectable levels of greenhouse gases; therefore, the project would not affect global climate change.

Visual Resources

Alternative 2 would have a short-term adverse impact on the visual resources in and near the project area as a result of construction activities and the presence of construction equipment. Post-project, the project area would look similar to the existing condition. Therefore, Alternative 2 would have no long-term effect on the visual resources within the project area.

4.2 LAND USE

4.2.1 Affected Environment

Land use in the vicinity of the project area is primarily agricultural. The Town of Windsor is west of the project area and consists of residential and commercial/industrial land uses. Another commercial/industrial land use area is located south of the project area.

4.2.2 Environmental Consequences

4.2.2.1 Alternative 1 – No Action Alternative

No activities would occur with this alternative other than continued maintenance on the ditch and roadways. Therefore, this alternative would have no impact on land use in the project area.

4.2.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

This alternative would convert approximately 12 acres of farmland to a flood conveyance channel. However, the alternative would have no impact on the overall land use surrounding the project area.

4.3 WATER RESOURCES

Water resources evaluated in this EA include surface water, floodplains, and wetlands. Initial assessment of groundwater indicated that construction activities would not be deep enough to affect groundwater; therefore, groundwater resources are not evaluated further.

4.3.1 Affected Environment

4.3.1.1 Surface Water

The project area is in the South Platte watershed, which contains approximately 67 percent of Colorado's population. Water storage reservoirs in the watershed have been constructed to store water during high flow periods; water is released for domestic use when the demand for water exceeds the amount of water that can be supplied by streams (CDWR 1985).

Surface water resources in the vicinity of the project area include the Cache la Poudre River and Windsor Lake. The Cache la Poudre River originates in northern Colorado near the Continental Divide. The river flows out of Rocky Mountain National Park, through the City of Fort Collins, Colorado, and eventually into the South Platte River near Greeley, Colorado. The Cache la Poudre River is the only river in Colorado designated as a Wild and Scenic River by the National Park Service. The river passes Windsor along the southern edge of town, approximately 3 miles south of the project area. The Cache la Poudre is one of two sources of drinking water for the City of Fort Collins and is considered a high-quality water resource (USGS 2005). Windsor Lake is on the northern edge of Windsor, approximately 1.5 miles west-northwest of the project area. This is a public lake used for boating, swimming, and fishing (Town of Windsor 2012).

Additionally, several irrigation canals/ditches (e.g., Greeley Canal No. 2, John Law Ditch) are in or in the vicinity of the project area. Some of the larger ditches (e.g., Greeley Canal No. 2) contain water all year long. The John Law Ditch is one of the larger ditches in the area, but during the late fall and winter, flow in the ditch is greatly reduce and can at times have no flow. The smaller ditches may contain water only during the irrigation season. In general, these ditches flow south-southeast, and the water they convey is used for irrigation. Any unused water discharges to the Cache la Poudre River.

A preliminary assessment of the John Law Ditch indicated that it is considered waters of the U.S. (WOUS). **Appendix A, Exhibit 5** shows the existing channel and adjacent riparian vegetation.

4.3.1.2 Floodplains (Executive Order 11988)

Executive Order (EO) 11988 requires Federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. To accomplish this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities" for the following actions:

- Acquiring, managing, and disposing of Federal lands and facilities
- Engaging in federally undertaken, financed, or assisted construction and improvements

- Conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulation, and licensing activities

To satisfy the intent of EO 11988, FEMA employs an Eight-Step Decision-Making process when evaluating projects that have features within an identified 100-year floodplain. This process, which is presented in **Appendix D**, is similar to the NEPA compliance process, which encourages public involvement starting at the early stages of project development, avoidance of floodplains and wetlands, evaluation of all practicable alternatives, assessment of potential impacts, and avoidance/minimization of impacts.

The Town of Windsor participates in the National Flood Insurance Program (NFIP) and has implemented controls, zoning, and development regulations, along with effective land use planning, to reduce and control development that occurs within 100-year floodplains.

The entire John Law Ditch floodplain was studied in detail as part of the John Law LOMR Case No. 08-08-0233P. This LOMR identified flood elevations, depths, and discharges that were previously unknown. The LOMR identified such deficiencies in the 1991 FIRM that FEMA and the Colorado Water Conservation Board initiated remapping the entire floodplain upstream of the original LOMR area. FEMA issued approval of the LOMR on December 14, 2009. The revised John Law floodplain will be included in the digitized FIRMs for Weld County, which FEMA is currently compiling.

4.3.1.3 Wetlands (Executive Order 11990)

EO 11990 requires Federal agencies to avoid construction or management practices which would adversely affect wetlands unless that agency finds (1) there is no practicable alternative to the Proposed Action, and (2) the Proposed Action includes measures to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the natural beneficial values of wetlands. The Federal agency must provide opportunity for early public review by those who may be affected and include its findings in its environmental or other appropriate decision documents. To satisfy the intent of EO 11990 and 44 CFR Part 9, FEMA uses an Eight-Step Decision-Making Process **(Appendix D)** to evaluate projects with potential to affect wetland resources.

Activities disturbing WOUS and jurisdictional wetlands require a permit from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act of 1977 (33 U.S.C. § 1344).

A preliminary wetlands assessment indicated that wetlands occur along the entire length of the existing channel. The wetlands extend from the low-flow channel to the top of the bank. **Appendix A, Exhibit 5** shows the existing channel and associated riparian vegetation. Additional photographs of the project area are provided in **Appendix B**.

4.3.2 Environmental Consequences

4.3.2.1 Alternative 1 – No Action

Surface Water

Under the No Action Alternative, no improvements would be made to the John Law Ditch. Soil erosion due to flooding and the resulting downstream sediment deposition would continue to occur. Therefore, the No Action Alternative would continue to negatively affect surface water in and downstream of the project area.

Floodplains

The No Action Alternative does not have the potential to adversely affect floodplains because no construction would occur.

Wetlands

Under the No Action Alternative, no improvements would be made to the John Law Ditch. Soil erosion due to flooding and the resulting downstream sediment deposition would continue to occur. Therefore, the No Action Alternative would continue to negatively affect wetlands in and downstream of the project area.

4.3.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

Surface Water

The Proposed Action would remove the existing culverts under SH 392 and replace them with twin 6-foot x 8-foot box culverts. New twin box culverts (4-foot x 8-foot) would also be placed under WCR 21 and Greeley Canal No. 2. These components would be designed to convey stormwater runoff associated with storm events up to the 10-year event within the channel. The project would have no effect on the quantity of water transported downstream because overland flood waters currently end up in downstream irrigation canals or the Cache la Poudre River. However, the Proposed Action would slightly reduce the slope of the ditch in the project area. BMPs, such as straw wattles, silt fences, erosion control blankets, and dewatering the ditch prior to and during construction activities would be used to minimize downstream water quality impacts. Post-construction, the modified channel banks would be revegetated with native grasses. The project would have a short-term, minor, negative impact on water quality downstream of the project area. The project would be expected to have a long-term, positive effect on water quality by reducing the frequency and amount of soil erosion and downstream sediment deposition associated with flood events.

EPA's National Pollutant Discharge Elimination System (NPDES) Program requires all construction activities that disturb more than 1 acre to receive a permit. The Water Quality Control Division of the CDPHE administers the NPDES Program in Colorado. This project would disturb approximately 12 acres of soils; therefore, a NPDES permit (Colorado Discharge

Permit System Stormwater Discharge Associated with Construction) would need to be obtained from CDPHE prior to beginning construction activities.

Floodplains

The proposed project would modify approximately 4,000 linear feet of the John Law Ditch to improve the conveyance of storm runoff from the project area. Post-project, the ditch would be able to convey up to a 10-year event within the channel and provide protection from flooding associated with such an event to 10 residential properties.

Based on the available FIRM (FEMA 1991), the project area is located in the floodplain (Zone A) and the John Law Ditch floodway. Zone A is the 100-year floodplain and has a 1-percent probability of flooding every year. Flood elevations have not been determined for this zone; therefore, FEMA's Eight-Step Decision Making Process, included in **Appendix D,** was used to evaluate alternatives that could avoid or reduce potential impacts on the floodplain. Results of this eight-step process confirmed that there are no practicable alternatives to locating the Proposed Action in the 100-year floodplain.

The Proposed Action would not contribute to development within the 100-year floodplain and would not affect the functions or values of the floodplain within or downstream of the project area.

Because the proposed project would involve construction in the floodplain, and in compliance with EO 11988 and per Step 2 in the eight-step process, a public notice was published in the *Windsor Beacon* on April 6, 11, and 13 2012, which informed the public and other interested parties that FEMA intends to fund a project that includes activities in the base floodplain of the John Law Ditch. No comments were received from the public during the initial review period.

The Town of Windsor would be required to obtain a Floodplain Development Permit from the local floodplain administrator for construction activities in the floodway and 100-year floodplain.

Wetlands

The Proposed Action would affect approximately 1 acre of WOUS and wetlands (Town of Windsor 2011). Post-project, the modified channel would include a low-flow channel designed to mimic the existing channel. The banks would be revegetated with native grass species and the low-flow channel would allow wetland vegetation to re-establish once construction is completed. The USACE confirmed that the John Law Ditch is considered jurisdictional WOUS and an Individual Section 404 Permit would be required for this project because potential impacts exceed 0.5 acre (personal communication between T. McKee, USACE, and Sue Volkmer, URS, April 16, 2012). The permit would need to be obtained prior to beginning construction activities, and the Town of Windsor would need to comply with the mitigation measures identified in the permit. The Town would also need to obtain a Section 401 Water Quality Certification from the CDPHE. With implementation of mitigation measures, no net loss of wetlands/WOUS would be anticipated with this project.

FEMA's Eight-Step Decision Making Process was used to evaluate alternatives that could avoid or minimize potential project-related impacts on wetlands. Actions and determinations associated with each of the steps are provided in **Appendix D**. Results of this eight-step process confirmed that there is no practicable alternative to the Proposed Action that would not affect wetlands. Since the proposed project would affect wetlands and WOUS, to be in compliance with EO 11990 and per Step 2 in the eight-step process, a public notice was published in the *Windsor Beacon* on April 6, 11, and 13 2012, to inform the public and other interested parties that FEMA intends to fund a project that includes activities in wetlands and WOUS associated with the John Law Ditch. No comments were received from the public during the initial review period.

4.4 BIOLOGICAL RESOURCES

The biological resources considered in this EA are vegetation, terrestrial wildlife, aquatic wildlife, and threatened and endangered species.

4.4.1 Affected Environment

4.4.1.1 Vegetation

The banks of the John Law Ditch are dominated by reed canary grass, which is an invasive, exotic grass. Other vegetation found along the banks of the ditch includes cattails, threesquare, prairie cordgrass, crispy dock, horsetail, tamarisk, smooth brome, and scratchgrass.

Upland species include weedy species such as Mexican summer-cypress, common sunflower, saltgrass, milkweed, thistle, perennial sowthistle, and big bluestem. Beyond the banks of the ditch, the project area contains cropland (Town of Windsor 2011).

Typical vegetation in the project area is shown in **Appendix A, Exhibit 5**. Additional photographs are provided in **Appendix B**.

4.4.1.2 Terrestrial Wildlife

The project area consists of a modified natural drainage channel surrounded by agricultural fields and scattered farmsteads and residences. Grassy vegetation along the banks of the John Law Ditch extends from the channel approximately 2 to 3 feet on each side, providing little habitat for wildlife species. Wildlife commonly found in this type of area includes small mammals such as raccoons, rabbits, opossums, squirrels; passerine birds such as warblers and robins, various woodpeckers, and raptors (hawks and eagles); and a limited number of amphibians and reptiles.

The Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. §§ 703–711) prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations. The U.S. Fish and Wildlife Service (USFWS) consults on issues related to migratory birds.

4.4.1.3 Aquatic Wildlife

The existing channel is narrow with a sediment bottom and banks with grassy vegetation. There are no trees to shade the channel. No aquatic species were observed in the ditch during site reconnaissance.

4.4.1.4 Threatened and Endangered Species and Critical Habitat

Section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1536) requires Federal agencies to ensure that actions authorized, funded, or carried out by them are not likely to jeopardize the continued existence of threatened, endangered, or proposed species or cause destruction or adverse modification of their critical habitats.

The USFWS lists nine threatened or endangered species that may occur or could be affected by projects in Weld County (USFWS 2012a).

Colorado has 16 State-listed threatened and endangered animal species that are not also federally listed (CPW 2012a). Of these 16 species, six have the potential to occur in Weld County (CPW 2012b). Colorado has no State-level recognition or protection for plant species (CSU 2011). **Table 4-1** lists the federally and State-listed threatened and endangered species, their habitat requirements, and whether suitable habitat is present within the project area.

4.4.2 Environmental Consequences

4.4.2.1 Alternative 1 – No Action

Vegetation

Under the No Action Alternative, no construction activities associated with the John Law Ditch would occur; therefore, there would be no impact on vegetation within the project area.

Terrestrial Wildlife

Under the No Action Alternative, no construction activities associated with the John Law Ditch would occur; therefore, there would be no impact on wildlife species or habitats within the project area.

Aquatic Wildlife

Under the No Action Alternative, no construction activities associated with the John Law Ditch would occur; therefore, there would be no impact on aquatic wildlife species or habitats within the project area.

Threatened and Endangered Species and Critical Habitat

The No Action Alternative would not affect any federally or State-listed threatened or endangered species or designated critical habitat because no construction would occur.

4.4.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

Vegetation

All vegetation (approximately 1 acre) along John Law Ditch would be removed during excavation of the channel. This vegetation is dominated by invasive, exotic grass species. Post-project, the modified channel and banks would be revegetated with native grasses. Therefore, the Proposed Action would have a long-term, positive impact on vegetation within the project area.

Terrestrial Wildlife

Although the Proposed Action would remove grassy vegetation along the drainage channel, this vegetation is dominated by invasive species and is a poor-quality habitat. Therefore, the Proposed Action would be unlikely to have any impact on terrestrial wildlife species or habitats. No tree removal is expected with this project; therefore, there would be no impact on migratory bird species. Post-project, the bank would be revegetated with native grass species.

Aquatic Wildlife

With the Proposed Action, construction activities would occur in an existing irrigation ditch. The ditch has a sediment bottom and does not contain water year-round. Fish require year-round water, gravel bottoms, and vegetation below the water line to spawn. Additionally, within the existing irrigation ditch system, fish would have to maneuver through several culverts to reach the John Law Ditch. Therefore, the John Law Ditch does not provide adequate habitat for aquatic species. All construction activities would occur when the ditch is dry, and BMPs would be implemented to limit downstream sedimentation. Therefore, the Proposed Action would have no effect on aquatic species.

Threatened and Endangered Species

Federally Listed Species

The USFWS lists nine threatened or endangered species that may occur in Weld County that could potentially be affected by the proposed project (USFWS 2012a). **Table 4-1** lists FEMA's determinations for potential effects to the nine federally listed species from the Proposed Action.

The habitats required by the whooping crane, least tern, piping plover, pallid sturgeon, and western prairie fringed orchid do not occur in the project area. However, these species could be affected by flow depletions in the Platte River basin, which includes the South Platte watershed. Because the Proposed Action would have no effect on flows of any stream or river in the Platte River basin, FEMA has determined the Proposed Action would have no effect on these five species (**Appendix C**).

Potential impacts to the remaining four species that may occur in Weld County are discussed below. These species would not be affected by flow depletions in the South Platte River Basin (non-flow depletion species).

Preble's Meadow Jumping Mouse
The distribution range of the Preble's meadow jumping mouse includes the northern Front Range of Colorado and southeastern Wyoming. Typical habitat for the mouse is wet meadows and well-developed riparian vegetation in the vicinity of a water source. Generally, their preferred habitat includes a relatively dense combination of grasses, forbs, and shrubs. However, the mouse regularly ranges out from the riparian/wet meadow habitat into adjacent upland habitat to feed and hibernate (USFWS 2012b).

Hibernation extends from September/October to May. Hibernation nests occur underground both within and outside the 100-year floodplain. Hibernacula have been located under willow, chokecherry, snowberry, skunkbrush, sumac, clematis, cottonwoods, Gambel's oak, thistle, and alyssum (USFWS 2012b).

The mouse feeds on a wide range of vegetation depending on the habitat being occupied and the season. Reported food items include insects, seeds, fungus, and fruit (USFWS 2012b).

The USFWS listed the species primarily because of the rapid loss of its habitat along the Front Range in Colorado, which was associated with development on private lands. Development activities involving wetlands, wet meadows, and closure of irrigation canals and ditches cause potential loss of habitat for the Preble's meadow jumping mouse (USFWS 2012b). There is no critical habitat identified for the mouse in Weld County (USFWS 2012f). The cultivation of agricultural fields along the John Law Ditch makes the area unusable for the mouse. Therefore, FEMA has determined the Proposed Action would have no effect on the Preble's meadow jumping mouse (**Appendix C**).

Mexican Spotted Owl
Old growth or mature forests that contain complex structural components (uneven-aged stands, high canopy closure, multi-storied levels, and high tree density) are the primary habitat used by the Mexican spotted owl. Canyons with riparian or conifer communities are also important habitat for the owl (USFWS 2012c). The USFWS indicates the Mexican spotted owl has the potential to occur in Weld County (USFWS 2012a); however, the required habitat does not occur in the project area or surrounding areas. Therefore, FEMA has determined the Proposed Action would have no effect on the Mexican spotted owl (**Appendix C**).

Colorado Butterfly Plant
The Colorado butterfly plant occurs at elevations of between 5,000 and 6,400 feet on sub-irrigated, alluvial soils in floodplains and drainage bottoms. The species requires early- to mid-successional riparian habitat with no dense or overgrown vegetation. It is an early successional species that is adapted to stream channel sites that are periodically disturbed. Without periodic disturbances, occupied habitat can become choked with willows, grasses, and exotic species, causing loss of the species in that location (USFWS 2012d).

The project area is below the preferred elevations for this species, the irrigation ditch contains thick grassy vegetation that would choke out the butterfly plant, and cultivated fields surround

the ditch. Therefore, FEMA has determined that the Proposed Action would have no effect on the Colorado butterfly plant (**Appendix C**).

Ute Ladies'-Tresses
The Ute ladies'-tresses is a perennial terrestrial orchid that occurs along riparian edges, gravel bars, old oxbows, high-flow channels, and moist/wet meadows along perennial streams (USFWS 2012e). The project area does not include any perennial streams or wet meadows; therefore, FEMA has determined the Proposed Action would have no effect on the Ute ladies'-tresses.

On April 30, 2012, the USFWS stated they had no concerns regarding the Proposed Action with regard to the non-flow depletion species (**Appendix C**).

State-Listed Threatened and Endangered Species

The State-listed species for Weld County that are not also federally listed include six species (CPW 2012a). **Table 4-1** lists these species, their habitat requirements, and FEMA's determinations of potential effect from the Proposed Action.

River Otter
River otters use riparian habitat, where aquatic animals like crayfish, frogs, fish, and young muskrats and beavers are favored foods. Otters usually live in bank dens abandoned by beavers (CPW 2012b). The project area does not contain habitat used by the river otter; therefore, FEMA has determined the river otter would not be affected by proposed project activities.

Black-Footed Ferret
The black-footed ferret uses prairie dog tunnels and preys on prairie dogs. The project area is an irrigation ditch surrounded by agricultural fields (CPW 2012b). No prairie dog colonies occur within or in the immediate vicinity of the project area; therefore, FEMA has determined the black-footed ferret would not be affected by proposed project activities.

Plains Sharp-Tailed Grouse
This prairie bird occupies rolling hills with scrub oak thickets and grassy glades. They can also use scrub oaks, serviceberries, and willows. The bird typically occupies medium to tall grasslands for courtship and nesting (CPW 2012b). These habitat types are not located within the project area; therefore, FEMA has determined the plains sharp-tailed grouse would not be affected by proposed project activities.

Western Burrowing Owl
This owl is found primarily in grasslands and mountain parks, usually in or near prairie dog towns. The burrowing owl also uses well-drained, steppes, deserts, prairies, and agricultural land (CPW 2012b). The project area is entirely within cultivated fields, and the surrounding area is developed as urban or suburban housing and agricultural fields. The type of habitat used by the western burrowing owl is not located in the project area or vicinity; therefore, FEMA has determined the western burrowing owl would not be affected by proposed project activities.

Suckermouth Minnow
This fish is usually found in riffle areas of warm prairie streams of all sizes with low to moderate currents and year-round flows (CPW 2012b), and has the potential to occur in Weld County (Woodling 1985). However, the John Law Ditch does not provide the required habitat for this species; therefore, FEMA has determined the suckermouth minnow would not be affected by proposed project activities.

Brassy Minnow
This fish requires areas of cool, clear water with abundant aquatic vegetation and a gravel substrate overlaid by organic sediment (CPW 2012b). Although Weld County is within the known range for the brassy minnow (Woodling 1985), the John Law Ditch does not provide adequate habitat; therefore, FEMA has determined the brassy minnow would not be affected by proposed project activities.

Colorado Parks and Wildlife (CPW) was contacted regarding this project on May 4, 2012. In a response dated June 15, 2012, CPW agreed that the proposed project would have no impact on any State-protected species (**Appendix C**).

Table 4-1: Federal and State-Listed Species with the Potential to Occur in or Be Affected by Projects in Weld County

Common Name	Scientific Name	Federal Status	State Status	Habitat Preference	Habitat Present in Project Area?	Effects Determination
Whooping crane	Grus americana	E	E	Mid-river sand bars, and wet meadows along Platte River system.	No	No Effect
Least tern	Sterna antillarum	E	E	Bare sand, gravel bars, and waste sand piles along Platte River system.	No	No Effect
Piping plover	Charadrius melodus	T	T	Bare sand, gravel bars, and waste sand piles along the Platte River system.	No	No Effect
Pallid sturgeon	Scaphirhynchus albus	E	NL	Large turbid rivers including the lower Platte River in Nebraska.	No	No Effect
Western prairie fringed orchid	Platanthera praeclara	T	NL	Wet meadows associated with native prairies and wet riparian areas.	No	No Effect
Preble's meadow jumping mouse	Zapus hudsonius preblei	T	T	Wet meadows and well-developed riparian vegetation near a water source. Dense combinations of grasses, forbs, and shrubs.	No	No Effect
Mexican spotted owl	Strix occidentalis lucida	T	T	Old growth mature forest with complex structural components and high canopy closure. Canyons with riparian or conifer communities.	No	No Effect
Colorado butterfly plant	Gaura neomexicana var. coloradensis	T	NL	Typically found in wetland habitats along the meandering stream channels on the high plains. In undisturbed sites, it grows among native grasses. The Colorado butterfly plant prefers open habitat that is not substantially overgrown by other vegetation.	No	No Effect
Ute ladies'-tresses	Spiranthes diluvialis	T	NL	Riparian edges, gravel bars, old oxbows, high flow channels, and moist/wet meadows along perennial streams at elevations between 4,300 and 6,850 feet.	No	No Effect
River otter	Lutra canadensis	NL	T	Riparian habitat, where aquatic animals like crayfish, frogs, fish, and young muskrats and beavers are favored foods. Otters usually live in bank dens abandoned	No	No Effect

Table 4-1: Federal and State-Listed Species with the Potential to Occur in or Be Affected by Projects in Weld County

Common Name	Scientific Name	Federal Status	State Status	Habitat Preference	Habitat Present in Project Area?	Effects Determination
				by beavers.		
Black-footed ferret	Mustela nigripes	NL	T	Habitat includes the eastern plains, the mountain parks and the western valleys—grasslands or shrublands that support some species of prairie dog, the ferret's primary prey.	No	No Effect
Plains sharp-tailed grouse	Tympanuchus phasianellus jamesi	NL	E	Use rolling hills with scrub oak thickets and grassy glades. They also use scrub oaks, serviceberries, and willows. Typically occupies medium to tall grasslands for courtship and nesting.	No	No Effect
Western burrowing owl	Athene cunicularia	NL	T	Primarily found in grasslands and mountain parks, usually in or near prairie dog towns. The burrowing owl also uses well-drained, steppes, deserts, prairies, and agricultural lands.	No	No Effect
Suckermouth minnow	Phenacobius mirabilis	NL	E	Usually found in riffle areas of warm prairie streams of all sizes with low to moderate currents and year-round flows.	No	No Effect
Brassy minnow	Hybognathus hankinsoni	NL	T	Areas of cool, clear water with abundant aquatic vegetation and a gravel substrate overlaid by organic sediment.	No	No Effect

Sources: CPW (2012a and 2012b); USFWS (2012a-f)

T = threatened

E = endangered

NL = not listed

4.5 CULTURAL RESOURCES

The National Historic Preservation Act of 1966 (NHPA; 16 U.S.C. 470 et seq.) constitutes the primary Federal policy protecting historic properties and promoting historic preservation, in cooperation with States, tribal governments, local governments, and other consulting parties. The NHPA established the National Register of Historic Places (NRHP) and designated the State Historic Preservation Officer as the individual responsible for administering State-level programs. The NHPA also created the Advisory Council on Historic Preservation, the Federal agency responsible for overseeing the process described in Section 106 of the NHPA (16 U.S.C. § 470f) and for providing commentary on Federal activities, programs, and policies that affect historic properties.

Section 106 of the NHPA and its implementing regulations (36 CFR Part 800) contain the procedures for Federal agencies to follow to take into account the effect of their actions on historic properties. The Section 106 process applies to any Federal undertaking that has the potential to affect historic properties, defined at 36 CFR § 800.16(l)(1) as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places." Although buildings and archaeological sites are most readily recognizable as historic properties, the National Register of Historic Places (NRHP) contains a diverse range of resources that includes roads, landscapes, and vehicles. Under Section 106, Federal agencies are responsible for identifying historic properties in the Area of Potential Effects (APE) for an undertaking; assessing the effects of the undertaking on those historic properties, if present; and considering ways to avoid, minimize, or mitigate any adverse effects. Because Section 106 is a process by which the Federal government assesses the effects of its undertakings on historic properties, it is the primary regulatory framework used in the NEPA process to determine impacts on cultural resources.

4.5.1 Affected Environment

Gordon C. Tucker, Jr., a URS archaeologist, qualified under the Secretary of the Interior's

Professional Qualification Standards for archaeology (36 CFR Part 61), conducted an assessment of the Proposed Action's potential to affect historic properties in the APE. The project area is located approximately one mile northeast of the Town of Windsor, Weld County, Colorado. The project involves improvements to approximately 4,000 linear feet of the Consolidated Law Ditch canal near the intersection of Colorado State Highway (SH) 392 and Weld County Road (WCR) 21.

Agriculture has defined this region for more than a century. The first settlers came to this area by 1860, including J. L. Hilton, who built a "Half-Way House" for travelers along the road between Fort Collins and Greeley. In early 1870, Nathan Meeker and his group of colonists settled the Greeley area, creating an agrarian society along the Cache La Poudre and South Platte rivers. These settlers constructed irrigation systems to water their crops. Soon settlers expanded into the

surrounding area. One such settler, Edward Hollister, purchased and homesteaded most of the land that makes up southern Windsor in 1872–1879 (Kline 2012:7).

Located half-way between Fort Collins and Greeley, Colorado, Windsor grew as a stop on the Greeley, Salt Lake, and Pacific Railway, which later became the Colorado and Southern Railway. The town of Windsor was incorporated in 1890 (Town of Windsor Colorado 2012). Wheat farming became the dominant farming practice in the area, and a flour mill was soon constructed in town to support this endeavor. The area settlers and communities designed and built major irrigation systems in Weld County that became the mainstay for farmers. By the late nineteenth century, Windsor was a milling town that benefited from the area's extensive wheat production. In the early twentieth century, sugar beets replaced wheat as the principal agricultural commodity, and the Great Western Sugar Co. recruited Russian-German immigrants to hand pick and cultivate the beets. Windsor quickly grew during this period, developing a commercially active Main Street and building several new schools. A Kodak processing plant continued the community's economic growth during the mid-twentieth century.

On June 1, 2012, URS conducted a search of Compass, the Colorado cultural resource online database provided by the Office of Archaeology and Historic Preservation (OAHP) at History Colorado, for Sections 14, 15, and 22 of Township 6 North, Range 67 West, 6th Principal Meridian. The results show that one cultural resources inventory has been conducted within ½-mile of the project area (see **Table 4-2**) and four cultural resources have been documented within ½-mile of the project area (see **Table 4-3**).

Table 4-2: Previous Surveys Within 1/2 Mile of the Project Area

Report Title	Author(s)	Institution	Completion Date(s)
Public Service Company of Colorado, Ault to Fort St. Vrain, 230 KV Transmission Line, Weld County, Colorado	Brian O'Neil	Powers Elevation	April

Table 4-3: Known Cultural Resources Within 1/2 Mile of the Project Area

ID	Resource Name	Original Recording Date	Doc.	Site Type	Age	Within APE	NRHP Eligibility*
5WL841	Great Western Railroad (Segment 13)	1976	N/A	Abandoned Railroad Segment	1905	Yes	Officially Eligible on 06/20/1989 under Criterion A
5WL842	Greeley No. 2 Canal (Segment 9)	1989	WL.E.R1	Irrigation Canal Segment	1870-1877	Yes	Officially Eligible on 06/20/1989 under Criterion A
5WL866	Windsor Wye and Windsor Wye Switch House (Great Western Railroad)	1976	N/A	Abandoned Rail Wye and Switch House	1905-1940	No	Officially Eligible on 06/20/1989 under Criterion A
5WL3047	Weld County Road 21 Bridge (over Greeley No. 2 Canal)	2002	N/A	Steel Stringer Automobile Bridge	1920 -1960	Yes	Field Not Eligible on 03/19/2002

* NRHP eligibility, as determined by the Colorado State Historic Preservation Office

The one previous cultural resources inventory was completed on the western edge of the current project area. This inventory re-evaluated the Great Western Railroad (**5WL841**), the Greeley No. 2 Canal (**5WL842**), and the Windsor Wye and Switch House (**5WL866**). The fourth resource, a bridge on WCR 21 (**5WL3047**), was recorded in 2002 by Clayton Fraser as a part of the Colorado Historic Bridge Survey. The Windsor Wye and Switch House (**5BL866**) is located outside the APE and was not revisited during this project. The other three previously recorded resources are structures located in the APE and were re-evaluated during this project.

Survey of the proposed project resulted in the documentation of one previously recorded above-ground resource (**5WL3047**) and discovery and documentation of five new archaeological resources, including new segments of previously documented linear resources (**5WL841.17, 5WL842.21, 5WL1043.11, 5WL7222.1,** and **5WL7241.1**), and an isolated find (**5WL7221)**. These resources are listed in **Table 4-4** and described briefly below.

Table 4-4: Cultural Resources Within the Project APE

Number	Name	Description	NRHP Eligibility of Resource	Aspects of Integrity Remaining
5WL841.17	Great Western Railroad – Eaton to Windsor Branch	Abandoned Railroad	Overall Linear Resource is Eligible under Criterion A	Segment: Setting and Location
5WL842.21	Greeley No. 2 Canal	Irrigation Canal	Overall Linear Resource is Eligible under Criterion A	Segment: Location, Setting, Feeling, and Association
5WL1043.11	Great Western Railroad – Greeley to Stout Branch	Railroad	Overall Linear Resource is Eligible under Criterion A	Segment: Location, Setting, Feeling, and Association
5WL3047	Weld County Road 21/Greeley No. 2 Canal Bridge (CDOT No. WEL21.0-068.0A)	Steel Stringer Bridge	Not Eligible	Segment Location, Setting, Feeling, and Association
5WL7221	None	Isolated Historic Glass Artifact	Not Eligible	N/A
5WL7222.1	Consolidated Law Ditch	Irrigation Ditch	Overall Linear Resource is Eligible under Criterion A	Segment: Location, Setting, Feeling, and Association
5WL7241.1	John Law Ditch	Irrigation Ditch	Overall Linear Resource is Eligible under Criterion A	Segment: Location, Setting, Feeling, and Association

4.5.1.1 Aboveground Resources

Historic Bridge (5WL3047)

This site, a previously documented structure, is a steel stringer bridge with no superstructure. It conveys WCR 21 over the Greeley No. 2 Canal. WCR 21 is shown on a 1902 USGS 1/125,000 Greeley map (USGS 1902), and the Greeley No. 2 Canal was built starting in 1870 (Boyd 1897 and Hemphill 1922). The original bridge was probably built in the 1920s and was replaced in 1963 using a salvaged metal railroad car. In the 1980s, flex-beam guardrails were added along each side of the bridge's deck. This structure is recommended as not eligible for listing in the NRHP under Criteria A and B, because it is not known to be associated with any significant events or people; under Criterion C, because it does not represent the distinct characteristics of a type, period, or method of construction, nor does it represent the work of a master, or possess any artistic value; or under Criterion D, because it is unlikely to provide any additional significant information about the local history. Further cultural resources work at this location is unnecessary.

4.5.1.2 Archaeological Resources

Great Western Railroad Eaton to Windsor Branch (5WL841.17)

The site is an approximately 600-ft-long segment of the Great Western Railroad's Eaton to Windsor Branch, which crosses a segment of the Greeley No. 2 Canal (**5WL842.21**). The recorded railroad segment consists of a 50-foot graded right-of-way with one area that has in-situ wooden ties and several small areas of coal-darkened soil. The Great Western Railway was started in 1901 as a subsidiary of the Great Western Sugar Company to transport sugar beets and sugar from the fields to the processing factories and then to markets. The first rail was built by the Colorado and Southern Railway to connect to the sugar factory in Loveland, Colorado, and the rail was subsequently extended in 1905 to reach Greeley, Windsor, and Eaton. The railroad was used until approximately 1977, when trucks replaced the railroad to haul the beets. The rail was dismantled in 2004 and turned into a pedestrian and bicycle trail in 2008 (Fraser and Strand 2005; Great Western Trail Authority 2012).

The Great Western Railroad (5WL841) is associated with significant events that helped shape the local communities and helped to shape the State in regard to both agricultural and railroad contexts. The entire linear resource is associated with the sugar beet industry, and the formation and continuation of several Weld County towns, such as Loveland, Windsor, Greeley, Severance, Eaton, and others (in other counties, as well). Therefore, the Great Western Railroad is recommended as eligible for listing in the NRHP under Criterion A because of its association with locally significant events. The entire resource is recommended as not eligible under Criterion B, because it is not associated with any significant persons; under Criterion C, because it does not represent the distinct characteristics of a type, period, or method of construction, nor does it represent the work of a master, or possess any artistic value; or under Criterion D, because it is unlikely to provide any additional significant information about the local history.

However, the recorded segment of the Great Western Railway (5WL841.17) lacks sufficient integrity to support the NRHP eligibility of the larger linear resource of which it is a part. It is, therefore, recommended as not eligible for listing in the NRHP.

Greeley No. Canal (5WL842.21)

This site is an approximately 2,000-ft-long segment of the Greeley No. 2 Canal. This segment of the canal includes the crossing of WCR 21 over a historic bridge (**5WL3047**), the headgate for the John Law Ditch (**5WL7241.1**), the headgate for the Consolidated Law Ditch (**5WL7222.1**), and a crossing of the Great Western Railway Eaton to Windsor Branch (**5WL841.17**). This segment is mostly unlined, although portions are lined with rock and concrete fragment riprap. The channel is U-shaped and measures 30 to 40 ft wide and up to 15 ft deep.

The Greeley No. 2 Canal was originally constructed in the fall of 1870 (Boyd 1897 and Hemphill 1922). The canal was notable for being the first large canal built by community effort in Colorado and it was also the first Colorado canal to irrigate an extensive area of bench land (Boyd 1897), which consists of narrow strips of level land bounded by steeper slopes. The ditch was constructed and designed by the Union Colony, later renamed Greeley (Hemphill 1922). Improvements to the canal were made in 1872, 1874, 1877, and 1890-1892 (Boyd 1897; Hemphill 1922).

The Greeley No. 2 Canal (**5WL842**) in its entirety is associated with the early development of agricultural irrigation in the area and is associated with the development of Greeley, Windsor, Severance, and other nearby local communities. The canal was designed, funded, and constructed by the Union Colony, which was founded by Horace Greeley and Nathan Meeker, two significant individuals in Colorado history. It was the first large-scale canal built by a community effort in Colorado, and it is the first canal in Colorado to water such a large area of bench land. It has undergone regular maintenance, repairs, and upgrades since its original construction to retain and even improve its function as a water conveyance canal. Therefore, the entire linear resource is recommended as eligible for listing in the NRHP under Criteria A, B, and C, but it is not eligible under Criterion D, because it is unlikely to provide any additional significant information about the local history. The recorded segment of the canal (**5WL842.21**) retains sufficient integrity to support the NRHP eligibility of the entire linear resource of which it is a part.

Colorado and Southern Railway Greeley to Stout Branch (5WL1043.11)

This site is an approximately 2,000-ft-long segment of the Colorado and Southern Railway's Greeley to Stout Branch. Although the railroad appears to be functional, the ties along this segment are in poor condition. A light covering of pebble ballast (various rock types) is distributed over the rail bed and along the berm of the grade. The bed is on a 4-ft-tall berm of dirt that measures approximately 35 ft wide. One of the rails in this segment is embossed with manufacturing marks: "Colorado SEC 90 R A-A II 1930 OH," indicating that this rail was manufactured in Colorado in February of 1930. A segment of the Consolidated Law Ditch

(**5WL7222.1**) is conveyed under the railroad by a poured-concrete box culvert of unknown age. The culvert measures approximately 6 ft by 5 ft.

This railroad was originally built by the Greeley, Salt Lake and Pacific Railway Company, a Union Pacific-backed subsidiary. This line was built to connect northern Colorado and its resources with Denver, then west through Utah, and ultimately to the west coast. Construction on the railroad's first line, a standard gauge rail between the stone quarries of Stout and Fort Collins and from Fort Collins to Greeley, was started in May 1881 (Fraser and Strand 2005). Until 1887, additional lines were built from Loveland to Arkins and up Boulder Canyon to what was then known as Sunset. In April 1890, the company merged with Union Pacific, Denver and Gulf Railroad (UPD&G). Then in 1898, the UPD&G and the Denver, Leadville and Gunnison Railway Company merged to form Colorado and Southern (C&S) Railway Company. The C&S merged with the Burlington Northern Railroad in 1970 (Fraser and Strand 2005).

The C&S Railway (**5WL1043**) in its entirety is associated with the development of a regional rail line tied to the national rail network. The planned line would connect Greeley and the surrounding to Denver, the western part of the state, and to Utah. The line that was ultimately built reached as far as the foothills north and west of Fort Collins and to points near Boulder and Denver. Even so, this line was still significant because stone from the Stout sandstone quarries, located in what is now Horsetooth Reservoir, were shipped across the state and country. The C&S Railway is recommended as eligible for the NRHP under Criterion A, because of its association with significant events. The entire resource is recommended as not eligible under Criterion B, because it is not known to be associated with any significant persons; under Criterion C, because it does not represent the distinct characteristics of a type, period, or method of construction, nor does it represent the work of a master, or possess any artistic value; or under Criterion D, because it is unlikely to provide any additional significant information about local history. The recorded segment of the C&S Railway (**5WL1043.11**) retains sufficient integrity to support the NRHP eligibility of the larger linear resource of which it is a part.

Consolidated Law Ditch (5WL7222.1)

This site is an approximately 7,000-ft-long segment of the Consolidated Law Ditch, which includes a gate on the Greeley No. 2 Canal (**5WL842.21**), a culvert under SH 392, a culvert under the C&S Railroad (**5WL1043.11**), and several lateral/diversion features. Water in the ditch is conveyed under the Greeley No. 2 Canal's access road and flows into a concrete Parshall flume for measurement and erosion control. The ditch channel itself is unlined and shallow, approximately 6 ft wide and 4 ft deep. The culvert at SH 392 is a corrugated metal pipe that measures 6 ft in diameter. The culvert at the railroad crossing is a poured modern concrete box culvert with wing walls. That portion of the canal south of the C&S Railroad was realigned between 1950 and 1978.

Andrew Law, the namesake of the Consolidated Law Ditch, was a prosperous farmer and rancher who emigrated in 1873 with his family from his home in Ritchie County, Virginia (now West

Virginia) to Colorado (Greeley Tribune 1896). Andrew Law and several of his sons and nephews settled in Weld County, Colorado, near the Greeley-Windsor-Severance area and, over the next several decades, purchased land south and east of Windsor. In approximately 1883, Andrew Law and his sons, John Emory, Harvey Milton, and Lorenzo Dow, and possibly his nephew Thomas W., built the Consolidated Law Ditch to irrigate the lands they owned, grazed, and farmed at the Cache La Poudre River and north along the Black Hollow dry wash (Shwayder 1992). Another ditch associated with the Law family is the John Law Ditch, which continues north where the Consolidated Law Ditch ends at the Greeley No. 2 Canal. This ditch ends several miles north at the John Law Reservoir, which John Emory Law built sometime before 1897. By 1903, John Emory Law owned the majority of land along the Consolidated Law Ditch and the John Law Ditch, with most land on the east side of the ditches (Baker and Badger 1903).

The Consolidated Law Ditch (**5WL7222**) in its entirety is associated with the early development of agricultural irrigation in the area and the development of nearby local communities, as well as the Law family, one of the pioneering farming families in the area. Therefore, the entire linear resource is recommended as eligible for listing in the NRHP under Criteria A and B. It is not considered eligible for listing in the NRHP under Criterion C, because it does not represent the distinct characteristics of a type, period, or method of construction, nor does it represent the work of a master, or possess any artistic value; or under Criterion D because it is unlikely to provide any additional significant information about local history. The recorded segment of the Consolidated Law Ditch retains sufficient integrity to support the NRHP eligibility of the larger linear resource of which it is a part.

John Law Ditch (5WL7241.1)

This site is an approximately 200-ft-long segment of the John Law Ditch. This segment includes a modern headgate on the Greeley No. 2 Canal (**5WL842.21**) and a diversion feature to an adjacent field. The ditch channel is unlined and V-shaped, measuring approximately 3 ft at the bottom and 8 ft at the top. The ditch runs parallel and adjacent to WCR 21, with no shoulder or fencing.

The John Law Ditch (**5WL7241**) in its entirety is associated with the early development of agricultural irrigation in the area and is associated with the development of nearby local communities, as well as the Law family, one of the pioneering farming families in the area. Therefore, the entire linear resource is recommended as eligible for listing in the NRHP under Criteria A and B. It is not considered eligible for listing in the NRHP under Criterion C, because it does not represent the distinct characteristics of a type, period, or method of construction, nor does it represent the work of a master, or possess any artistic value; or under Criterion D, because it is unlikely to provide any additional significant information about the local history.

Isolated Find (5WL7221)

This is an isolated fragment of a glass bottle. It is sun-colored purple glass with embossed letters that read “One Pint.” It was found along the edge of a modern dirt and gravel access road near a

modern sewer manhole. This is only an isolated fragment of historic refuse and cannot provide any significant information; therefore, it is not considered eligible for listing in the NRHP.

4.5.2 Environmental Consequences

4.5.2.1 Alternative 1 – No Action

The No Action Alternative would have no impact on cultural resources. Therefore, FEMA has determined that no historic properties would be affected by the No Action Alternative.

4.5.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

An intensive cultural resources survey of the project APE documented six sites and an isolated historic artifact. FEMA has determined that the recorded segments of the Great Western Railroad's Eaton to Windsor Branch (**5WL841.17**), the Greeley No. 2 Canal (**5WL842.21**), Colorado and Southern Railway's Greeley to Stout Branch (**5WL1043.11**), the Consolidated Law Ditch (**5WL7222.1**), and the John Law Ditch (**5WL7241.1**), retain sufficient integrity to support the NRHP eligibility of the larger linear resources of which they are a part. FEMA has also determined that a previously recorded bridge on WCR 21 (**5WL4037**) and an isolated historic artifact (**5WL7221**) are not eligible for listing in the NRHP.

FEMA initially determined that the proposed undertaking would not adversely affect the documented historic properties in the APE, and believes, the proposed improvements will help reduce erosion and provide greater stability to the irrigation ditches and associated resources. The actions of this project are consistent with the activities involved in maintaining the historic features and keeping them functioning efficiently and safely, just as they were originally intended to function, as they still function, and as they will continue to function, except with updated (modern) components and engineering standards.

In a letter dated August 24, 2012 (**Appendix C**), FEMA sent their determination that the proposed undertaking would have *no adverse effect* to historic properties to the SHPO. The SHPO did not concur with this finding (October 17, 201, **Appendix C**). A Memorandum of Agreement (MOA) was developed among FEMA, SHPO, Colorado Office of Emergency Management, and Windsor. The MOA is provided in **Appendix E**. Windsor has agreed to comply with all the stipulations identified in the MOA which will be made part of the federal grant; therefore, any adverse effect to historic properties will be mitigated.

On August 28, 2012, FEMA sent letters to the following tribes seeking their comments on potential impacts to archaeological sites, burials, and traditional cultural properties in or near the project area:

- Cheyenne and Arapaho Tribes, Oklahoma
- Arapaho Tribe of the Wind River Reservation, Wyoming

- Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana

The letters are included in **Appendix C**. If unexpected discoveries are made during the course of project execution, FEMA will proceed in compliance with State and Federal laws protecting cultural resources, including Section 106 of the NHPA, and all work will cease in the immediate vicinity of the find until appropriate parties are consulted and a treatment plan is established.

4.6 SOCIOECONOMICS RESOURCES AND ENVIRONMENTAL JUSTICE

4.6.1 Affected Environment

4.6.1.1 Socioeconomics

The Town of Windsor was incorporated in 1890 and covers approximately 23 square miles of land in Weld County. Historically, Windsor was an agricultural community with industry centered on sugar beets and sugar manufacturing. Today, Windsor leads the way for northern Colorado in attracting green industry. In addition to wind turbine blade production, the area supports ethanol production, a recycling facility, and other green industries. Windsor has recently seen a dramatic growth, with the population nearly doubling between 2000 (9,896 persons) to 2008 (19,001 persons) (Town of Windsor 2011).

According to the U.S. Census Bureau (USCB), the population of Windsor in 2010 was 18,644 people, with an average household size of 2.82 people. Approximately 49.8 percent of the population were men and 50.2 percent were women. Approximately 95 percent of the people over 25 years of age in Windsor were high schools graduates, and approximately 43 percent were college graduates. In 2010, the per capita income for Windsor residents was $31,031, and the median household income was $75,970. The per capita income and median incomes for Windsor are higher than the State average (USCB 2012a).

According to the USCB, the population of Weld County in 2010 was 252,825 people. The average household size in 2010 was 2.74 people. Approximately 50 percent of the population were men and 50 percent were women. Approximately 85 percent of the people over 25 years of age in Weld County were high schools graduates, and approximately 25 percent were college graduates. In 2010, the per capita income for Weld County residents was $24,732, and the median household income was $55,596. The per capita income and median incomes for the County are lower than the State average (USCB 2012b).

4.6.1.2 Environmental Justice

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to “make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health

or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

Based on the 2010 population census (USCB 2012a), Windsor has a population of 18,644 people. Approximately 88 percent are white, not Hispanic. Minorities include Hispanics or Latinos (9 percent), African Americans (0.5 percent), Asians (1.2 percent), and persons of two races (2.1 percent).

Weld County has a population of 252,825 persons. Approximately 68 percent are white, not Hispanic. Minorities include Hispanics or Latinos (28 percent), African Americans (1.0 percent), Asians (1.2 percent), and persons of two races (2.9 percent) (USCB 2012b).

In 2010, 3.4 percent of the individuals in Windsor had incomes below the poverty level, which is lower than the 12.2 percent poverty level for the State (USCB 2012a). The poverty level for Weld County is 14 percent, which is higher than the State poverty level (USCB 2012b).

4.6.2 Environmental Consequences

4.6.2.1 Alternative 1 – No Action

Socioeconomics

The No Action Alternative would have no direct impact on the economics of Windsor or Weld County because the risk of flooding would not change from present conditions. There would be a continued risk of damage to infrastructure and private property from flood events and the resulting economic impacts of the cost of repairs and disruption of services for the property owners and the community.

Environmental Justice

Under the No Action Alternative, all populations within the project area and Weld County would continue to be at risk of the economic impacts associated with flooding. Therefore, the No Action Alternative would not have a disproportionately high and adverse human health or environmental effect on minority or low-income populations and meets the requirements of EO 12898.

4.6.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

Socioeconomics

The Proposed Action would reduce the risk of flooding and flood-related damage in the project area. SH 392 and WCR 21 would not be overtopped during events up to and including the 10-year event, maintaining traffic flow on these important roads. The Proposed Action would have a beneficial economic impact in the project area, Windsor, and Weld County by reducing flood damage from future flood events.

Environmental Justice

The Proposed Action would have a beneficial effect on all people living and working in the vicinity of the project area, including low-income and minority populations, as it would reduce the risk of damage to personal property and harm to persons from future flood events. No disproportionately high and adverse impacts on low-income or minority populations would result from the Proposed Action. Therefore, the Proposed Action complies with EO 12898.

4.7 COMMUNITY RESOURCES

The community resources considered in this EA are public health and safety, traffic and circulation, public services and utilities, and noise.

4.7.1 Affected Environment

4.7.1.1 Public Health and Safety

The potential for flooding in Law Basin is a safety concern for Windsor and Weld County. Flooding poses a potentially life-threatening situation for people caught in the floodwaters. Damaged and flooded roads are a public safety concern due to direct hazards and increased response times for emergency services. Standing water in residential and other structures can pose a health and safety risk for local residents due to the presence of biological hazards, such as sanitary sewer backup.

Currently, floods smaller than the 10-year event exceed the conveyance capacity of the John Law Ditch and have the potential to overtop local roads, including SH 392, a major connection between Greeley and Fort Collins, and WCR 21. The road closures increase emergency response times and cause inconvenience for residents who must use an alternate route to get to their destinations. These small flood events also have the potential to flood 10 residential properties along SH 392.

4.7.1.2 Traffic and Circulation

Appendix A, Exhibit 2 shows the major roads in the project area. SH 392 is a two-lane paved highway that serves as a major east-west connection between Greeley and Fort Collins, with approximately 8,200 vehicles per day using the highway. Just east of Windsor, SH 392 is at risk of overtopping during relatively minor events (less than 10-year return periods). WCR 21 is a paved, two-lane county road running north-south along the eastern edge of the project area with approximately 1,650 vehicles per day using this road. WCR 21 is also at risk of overtopping during minor events (less than 10-year return periods) (Town of Windsor 2011).

4.7.1.3 Public Services and Utilities

Utilities located within or near the project area are presented in **Table 4-5**.

Table 4-5: Utility Providers in the Project Area

Utility	Provider
Water	Windsor/North Weld County Water District
Sewer	Windsor
Cable	Comcast
Fiber Optics	Century Link
Telephone/Internet	Century Link
Electricity	Poudre Valley REA and Xcel Energy
Natural Gas	ATMOS Energy and Xcel Energy
Fire Protection	Windsor/Severance Fire District
Law Enforcement	Windsor Police Department/Weld County Sheriff Department

North Weld County Water District provides water to homes in the vicinity of the project area. In addition to these utilities, a waterline for the City of Greeley, Colorado, crosses the project area near the Colorado & Southern Railroad embankment. Overhead electrical lines and a natural gas line also intersect the project area near the Colorado & Southern Railroad embankment. A U.S. West fiber optic cable is located in the road right-of-way on the north side of SH 392.

4.7.1.4 Noise

Sounds that disrupt normal activities or otherwise diminish the quality of the environment are designated as noise. Noise events that occur during the night (9 p.m. to 7 a.m.) are considered more annoying than those that occur during normal waking hours (7 a.m. to 9 p.m.). Noise events in the project vicinity are presently associated with climatic conditions (wind, thunder), transportation noise (traffic on roads, airplanes), and "life sounds" (people talking, children playing). The project area is in a rural agricultural area. Noises associated with farming, such as grain trucks, tractors, and other farming equipment are common in the area.

4.7.2 Environmental Consequences

4.7.2.1 Alternative 1 – No Action

Public Health and Safety

Under the No Action Alternative, the potential for flooding would not change, and public health and safety concerns about the flooding of infrastructure and residential properties would remain. If temporary road closures are needed during future flood events, the ability of emergency personnel to efficiently access certain areas could be adversely affected. Law enforcement, in addition to their normal duties, would be called on to help ensure that local traffic does not use flooded roads. Windsor, Weld County, and the State would incur the economic costs of repair and maintenance of structures damaged by floodwaters. These effects would be temporary but recurring.

Traffic and Circulation

The No Action Alternative could have a long-term negative impact on local traffic if road closures were to occur due to flooding. The closures would last while water covers SH 392 and WCR 21 and during the time to repair the roads, if they are damaged by the flood waters.

Public Services and Utilities

The No Action Alternative would not directly affect any utilities in the project area. However, if flooding occurred, utilities associated with the residential structures and along the roads could be adversely affected by flood waters. Additionally, law enforcement, in addition to their normal duties, would be called on to help with flood-related issues and could be unavailable to respond to other emergencies in their service area.

Noise

Under the No Action Alternative, no construction activities related to flood risk reduction would occur, and there would be no effect on noise levels in the project area.

4.7.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

Public Health and Safety

The Proposed Action would convey flows up to the 10-year event in the modified channel, preventing flooding of the 10 residential properties along SH 392 and overtopping of SH 392 and WCR 21. Therefore, emergency vehicle response times during future flood events would not be affected.

Flooding can also overload sanitary sewer and potable water systems, causing a potential for sewer backup, loss of potable water, and power outages in the flooded area. The Proposed Action would help protect public health during future storm events by reducing the risk of flooding to the residential properties and associated utilities.

Traffic and Circulation

Since the transport of excavated soils from the project area to the identified stockpile area would not use public roads, the transport of the excavated soils would not contribute to congestion on public roads. Vehicle traffic would be generated by work crews traveling to and from work sites and trucks carrying equipment and construction materials to the project area. This additional traffic would be minimal and would not interfere with local residents or other drivers traveling in the vicinity of the project area.

Short-term, the Proposed Action would have a minor negative impact on local traffic during construction of the box culverts under SH 392. Two-way traffic would be maintained during construction activities by constructing temporary lanes on the shoulder, limiting traffic delays. During the excavation of the channel and construction of the box culverts under WCR 21, the county road would need to be closed. Traffic would need to use alternate routes (such as

WCR19, WCR23, and WCR 70) during these construction activities which are anticipated to last approximately 6 weeks. The detour would represent a minor inconvenience to motorists. Access to all properties would be maintained during construction activities. Residents would be notified of any road closures and detours.

Long-term, the Proposed Action would have a positive impact on local traffic by reducing the likelihood that SH 392 and WCR 21 would be closed due to flooding up to a 10-year event.

Public Services and Utilities

Alternative 2 would have short-term, minor, negative impacts on public services and utilities during construction activities. Colorado law requires notification of the Utility Notification Center of Colorado (UNCC) at least 3 business days before any excavation to minimize the risk of damaging underground utilities (UNCC 2012). Additionally, caution should be used during construction to avoid contact with overhead utility lines. With UNCC notification, Alternative 2 is not expected to have any impact on public services and utilities in the project area. If any interruption of service is necessary to complete the project, affected users would be notified ahead of time, and the loss of service would be expected to be short-term and minor.

Noise

Construction activities associated with the Proposed Action would temporarily increase noise levels in the project vicinity. No sensitive noise receptors are known to be within or in the vicinity of the project area. The project area is agricultural, and noise from farm equipment (similar to the noise of construction equipment) is a common occurrence. Noise associated with the operation of the construction equipment would be limited to the construction period, approximately 11 months. To minimize increases in noise levels, all equipment would be fitted with noise reducing features (e.g., mufflers) and construction activities would be limited to daytime hours (7 a.m. to 9 p.m. in the summer months and 8 a.m. to 6 p.m. during winter months). With implementation of these mitigation measures, noise impacts would be minimal and short-term.

4.8 HAZARDOUS SUBSTANCES / WASTES

4.8.1 Affected Environment

A substance is classified as hazardous if it has the potential to damage the environment and/or be harmful to humans and other living organisms. The presence of a hazardous substance/waste within, in the vicinity of, and/or upgradient of a project area is important in determining development constraints and the viability of an action.

For a flood control/flood mitigation type project such as the Proposed Action, items of concern would include:

- Presence of a hazardous substance/waste within or in the immediate vicinity of the project area.
- Presence of an upgradient leaking underground storage tank (LUST) that is not considered "closed" or does not have a "no further action" status.
- Presence of an upgradient solid waste landfill.

To determine whether any facilities in the vicinity or upgradient of the project area have known and documented environmental issues or concerns, Environmental Data Resources, Inc. (EDR) completed a search of 68 Federal and State environmental databases. The EDR report includes environmental database records for the Proposed Action project area, immediately adjacent properties, and the standard EDR search radius. The search radius is specific to each database and varies from 0.25 mile to 1 mile (EDR 2012).

The databases contained no records of hazardous waste contamination in or adjacent to the project area that would be disturbed by proposed activities. In addition, the EDR Report did not identify any solid waste landfills or LUSTs (closed or active) within the search area.

4.8.2 Environmental Consequences

4.8.2.1 Alternative 1 – No Action

No construction activities would occur with this alternative; therefore, hazardous substances/wastes do not represent a concern for the No Action Alternative.

4.8.2.2 Alternative 2 – John Law Ditch Flood Mitigation Project (Proposed Action)

No sites were identified in any of the databases that would potentially affect the project areas or be affected by the implementation of the Proposed Action. Therefore, the presence of a hazardous substance/waste is not a concern for the Proposed Action.

4.9 CUMULATIVE IMPACTS

Section 1508.7 of the CEQ regulations defines cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable actions." Cumulative impacts are considered by placing seemingly isolated or insignificant direct and indirect effects of past, present, and foreseeable future projects in context with respect to overall impacts, both over time and in an area larger than that evaluated for direct and indirect effects. Cumulative effects are discussed in terms of being additive, synergistic, or reductive.

In addition to the Proposed Action, the following past, present, and foreseeable future projects within the vicinity of the John Law Ditch project were included in the assessment of cumulative impacts:

- Replacement of existing bridge on WCR 21 at the Greeley No. 2 Canal
- Repaving of SH 392
- Intersection project at WCR 23 and SH 392 (approximately ¾ mile east of the WCR 21/SH 392 intersection)

The bridge and intersection projects involve disturbance of existing soil and vegetation, and may contribute to downstream sedimentation during the construction period. These projects would also contribute to temporary and minor increased air emissions during construction. These construction-related impacts are not additive, synergistic, or reductive because the disturbed areas would be landscaped and revegetated prior to the start of another project.

Cumulative effects from the Proposed Action and other actions are anticipated to be minor and short-term.

4.10 COORDINATION AND PERMITS

The agency coordination and permits that would be required under the Proposed Action are described below.

- **U.S. Fish and Wildlife Service**. No additional coordination or permits are required regarding federally listed threatened and endangered species and migratory birds.
- **U.S. Army Corps of Engineers**. Application to the USACE for an Individual Section 404 Permit is required for anticipated impacts on the John Law Ditch (WOUS) and adjacent vegetated wetlands.
- **Natural Resources Conservation Service**. No additional coordination under FPPA would be required.
- **Colorado State Historic Preservation Officer**. No additional coordination required.
- **Colorado Parks and Wildlife**. No additional coordination would be required regarding State-listed threatened and endangered species.
- **Colorado Department of Public Health and Environment**. A State Air Pollution Permit, a NPDES Construction Permit, and a 401 Water Quality Certification would need to be obtained from the CDPHE prior to the start of construction.
- **Town of Windsor Floodplain Administrator**. A Floodplain Construction Permit would need to be obtained from the Town of Windsor.
- **Tribal Coordination**. No additional coordination required.

SECTION FIVE SUMMARY OF IMPACTS

A summary of potential environmental impacts of Alternative 1, No Action, and Alternative 2, John Law Ditch Flood Mitigation Project (Proposed Action), are presented in **Table 5-1**.

Under the No Action Alternative, no changes would be made to the John Law Ditch to increase the conveyance capacity and reduce the potential for flood damage.

Under the Proposed Action, twin concrete box culverts would be installed under both WCR 21 and SH 392. Channel improvements would also be made to approximately 4,000 linear feet of the John Law Ditch between WCR 21 and the Colorado & Southern Railroad embankment. The ditch would also be widened and realigned to improve conveyance of stormwater in the vicinity of SH 392. A new overflow spillway would be installed on the Greeley No. 2 Canal upstream of the canal's existing junction with WCR 21 and the John Law Ditch. The spillway would allow high flows in the Greeley No. 2 Canal to spill into the reconfigured John Law Ditch. Other project features include the placement of riprap at the road crossing and downgradient of the new spillway, road repair following the installation of the box culverts, utility work involving utilities in areas that would be disturbed, installation of erosion control measures, revegetation of disturbed areas, and replacement of removed fencing.

Table 5-1 contains a summary of the potential environmental impacts of the two alternatives that are discussed in Section 4.

Table 5-1: Environmental Effects of Alternatives

Environmental Resource	Resource Subcategory	Alternative 1: No Action	Alternative 2: John Law Ditch Flood Mitigation Project (Proposed Action)
Physical	Soils	No impact.	Approximately 52,000 cubic yards of soil would be excavated with this project. Construction of the modified channel would have a permanent impact on approximately 12 acres of soil. Approximately 9,000 CY of excavated soil would be used as fill material for the project. Top soil stockpiled and replace when construction complete. Excess soil (approximately 43,000 cubic yards) would be stockpiled at existing locations. Approximately 12 acres of prime farmland would be converted to water conveyance. This is within the allowable levels by the NRCS. BMPs would be used to minimize erosion during construction period. Long-term benefit due to decreased soil erosion during flood events up to the 10-year event.
	Air quality	No impact.	Minor, short-term adverse effect from equipment exhaust and dust during construction activities. A State Air Pollution Permit would be required from the CDPHE.
	Visual	No impact.	Short-term, minor impact during the construction period.
Land Use	—	No impact.	Conversion of 12 acres of agricultural land to flood conveyance. No impact on the overall land use in the area.
Water	Surface water	No impact.	Short-term minor impact on water quality during construction. BMPs would be used to minimize impact. Long-term positive impact on surface water quality due to reduced soil erosion and sediment deposition associated with flood events. A NPDES permit would be required from the CDPHE.
	Floodplains	No impact.	Events up to the 10-year event would be conveyed in the John Law Ditch. Entire project area is within the 100-year floodplain for the John Law Ditch. None of the project features would affect the functions or values of the floodplain, nor would any project activities affect the floodplain downstream of the project area. Additionally, the Proposed Action would not contribute to development within the 100-year floodplain. A Floodplain Development Permit from the local Floodplain Administrator is required prior to construction.

Table 5-1: Environmental Effects of Alternatives

Environmental Resource	Resource Subcategory	Alternative 1: No Action	Alternative 2: John Law Ditch Flood Mitigation Project (Proposed Action)
Water (continued)	Wetlands	No impact.	Approximately 1 acre of wetlands/WOUS would be affected by the project. A USACE Individual 404 permit would be required. The subapplicant must comply with the mitigation measures identified in the permit. A 401 Water Quality Certification must be obtained from CDPHE. Low-flow channel and revegetation with native grasses is anticipated to result in no net loss of wetlands.
Biological	Vegetation	No impact.	Short-term, minor negative impact during construction. Long-term positive impact as channel would be re-vegetated with native grasses.
	Terrestrial wildlife	No impact.	No impact.
	Aquatic wildlife	No impact.	No impact.
	Threatened and endangered species	No impact.	No effect on listed species.
Cultural	Aboveground	No impact.	Potential for adverse effects to historic properties. MOA was developed to mitigate any potential adverse effects. If unexpected discoveries are made during the course of project execution, FEMA will proceed in compliance with State and Federal laws protecting cultural resources, including Section 106 of the NHPA, and all work will cease in the immediate vicinity of the find until appropriate parties are consulted and a treatment plan is established.
	Archaeological	No impact.	No adverse effect on historic properties. If unexpected discoveries are made during the course of project execution, FEMA will proceed in compliance with State and Federal laws protecting cultural resources, including Section 106 of the NHPA, and all work will cease in the immediate vicinity of the find until appropriate parties are consulted and a treatment plan is established.
Socioeconomics and Environmental	Socioeconomics	Adverse impact on Weld County and residents living in the flooded area.	Long-term beneficial effect due to reduced flooding and associated cost of damage repair.

Table 5-1: Environmental Effects of Alternatives

Environmental Resource	Resource Subcategory	Alternative 1: No Action	Alternative 2: John Law Ditch Flood Mitigation Project (Proposed Action)
Justice	Environmental justice	No disproportionately high and adverse impacts on any minority or low-income population.	No disproportionately high and adverse impacts on any minority or low-income population. Beneficial effect on all local residents, including low-income and minority populations, as it would reduce the risk of harm to community and personal property during future flood events.
Community	Public health and safety	No direct impact on public health and safety. Adverse impact if a flood occurred and floodwaters caused sewer backups in the flooding houses. Adverse impact if a flood occurred and emergency response times were increased due to overtopping of SH 392 and/or WCR 21.	Short-term, minor impact during construction activities. Long-term beneficial impact from reduced risk of flooding and associated damage up to the 10-year event.
	Traffic and circulations	Adverse impact if flooding occurs and SH 392 and WCR 21 are closed, causing local residents to use alternate routes.	Short-term minor, negative impact during construction of the box culverts under SH 392. Temporary lanes would be constructed on shoulder, limiting delays. WCR 21 would be closed for approximately 6 weeks during construction activities. Minor impact on motorists using detour on other county roads. Long-term beneficial effect by avoiding road closings during future flood events.
	Public services and utilities	No direct impact on public services and utilities. Adverse impact if a flood occurs and utilities are damaged. Adverse impact if a flooding occurred and emergency response times were increased due to overtopping of SH 392 and/or WCR 21.	Windsor would need to contact UNCC at least 3 days prior to any excavation. Caution should be used to avoid overhead utility lines. Any interruptions would be short-term, and users would be notified prior to interruption of service. Long-term beneficial effect on utilities due to reduced risk of flood damage.
	Noise	No impact.	Short-term impact from the operation of construction equipment (dump trucks, backhoes, excavators, etc.) during the construction period. All equipment would be fitted with mufflers or other sound-reducing features. Construction would be limited to daytime hours (7 a.m. to 9 p.m. in the summer and 8 a.m. to 6 p.m. during winter months).

Table 5-1: Environmental Effects of Alternatives

Environmental Resource	Resource Subcategory	Alternative 1: No Action	Alternative 2: John Law Ditch Flood Mitigation Project (Proposed Action)
Hazardous Substances/Wastes	—	No impact.	No impact.

SECTION SIX PUBLIC INVOLVEMENT

6.1 PUBLIC NOTICES

The Initial Public Notice was published in the *Windsor Beacon* on April 6, 11, and 13, 2012 and is provided in Section 6.1.1. The Final Public Notice (Section 6.1.2) was published in the *Windsor Beacon* on _____ XX, 2012.

6.1.1 Initial Public Notice

Public notification is hereby given by the Department of Homeland Security's Federal Emergency Management Agency (FEMA) of the intent to prepare an Environmental Assessment (EA) for a proposed project submitted by the Town of Windsor, Weld County, Colorado to construct twin box culverts at two highway/county road crossings and to modify/construct a drainage channel between the two road crossings and between the highway crossing and the Colorado and Southern Railroad embankment within the John Law drainage basin. In addition, a conveyance structure would be constructed beneath Greeley Canal No.2, which would allow flows in John Law Ditch up to and including the 10-year flood event (10 percent annual risk) to be conveyed under the canal. A portion of the funding would be provided by FEMA's Pre-Disaster Mitigation Program. This program assists state and local governments with implementing cost-effective hazard mitigation planning and project activities that complement a comprehensive mitigation program.

The John Law stream was a drainage way that was altered early in the development of Weld County to convey irrigation water and is presently referred to as John Law Ditch. It serves a dual purpose of conveying irrigation water to downstream users and conveying runoff flow following precipitation events in the basin. Presently, neither the John Law Ditch nor road crossings of Colorado state Highway 392 and County Road 21 have the capacity to convey the flows that occur up to the 10 year flood event (10 percent annual risk). The Town of Windsor with concurrence from Weld County has determined that the conveyance capacity of the two road crossings need to be replaced with structures that have the capacity to convey flow associated with a 10-year flood event (10 percent annual risk) and to increase the capacity of the John Law Ditch between the two road crossings such that it also would be able to convey flows associated with a 10-year flood event (10 percent annual risk). The proposed action will reduce 10-year (10 percent annual risk) and 100-year (1 percent annual risk) flood damage risk for 10 homes in the floodplain of John Law Ditch. However, flows during flood events greater than the 10-year (10 percent annual risk) may continue to contribute to overtopping and closure of both roads and the Colorado & Southern Railroad tracks. Downstream from the proposed project area, flows within the John Law Ditch would be returned to the existing drainage and associated floodplain.

The President's Council on Environmental Quality (CEQ) has developed regulations to implement the National Environmental Policy Act (NEPA). These regulations require an investigation of the potential environmental impacts of a proposed federal action, and an evaluation of alternatives as part of the environmental assessment process. FEMA also has

regulations that establish the agency-specific process for implementing NEPA. An EA will be prepared in accordance with both FEMA and CEQ NEPA regulations. Two alternatives will be considered in the EA.

The NO ACTION ALTERNTIVE, which considers the consequences of taking no action to increase the conveyance capacity of the two road crossings and the 4,000-foot reach of the John Law Ditch.

The PROPOSED ACTION ALTERNATIVE would include the replacement of the two road crossings, modification/construction of a 1,700-foot conveyance channel between the two road crossings, channel improvements to a 2,300-foot reach of the John Law Ditch downstream from State Highway 392, construction of a new spillway on Greeley Canal No. 2, construction of conveyance structure beneath Greeley Canal No. 2, installation of riprap, road repair, and revegetation of disturbed areas. The construction period is expected to last 11 months.

Other alternatives considered but dismissed due to cost, public acceptance, and lack of a long-term solution included upstream detention of flood flows and removal of residential structures from the flood plain.

The President of the United States has issued Executive Orders that require Federal agencies to focus attention on the environment and on human health and safety when considering the funding of an action. Executive Order 11988, Protection of Floodplains, requires Federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. Executive Order 11990, Protection of Wetlands, requires Federal agencies to take action to minimize the loss of wetlands.

The No Action Alternative would not directly affect floodplains or wetland areas, but flooding would continue, which could result in impacts on the existing floodplain and wetlands adjacent to the creek while not satisfying the identified needs.

With this public notice, FEMA is informing the public that the Proposed Action Alternative will occur within the 100-year (1 percent annual risk) floodplain of John Law Ditch and would impact limited areas of wetlands located adjacent to the drainage way.

During the NEPA review process FEMA will also evaluate potential impacts to other environmental resources and compliance with other laws and regulations, such as, the Endangered Species Act, the National Historic Preservation Act, and Executive Order 12898 – Environmental Justice.

A public comment period related to the alternatives as outlined above or other possible alternatives will end 15 days following the publication of this public notice. In addition to this initial comment period, a final comment period will be opened for public review of the Draft EA.

Interested parties may obtain more detailed information about the alternatives from the Town of Windsor by calling Douglas Roth at (979) 674-2400 ext. 2435 or by email at

droth@windsorgov.com. Additionally, comments or question regarding the NEPA compliance process can be directed to Richard Myers, FEMA Region VIII Deputy Regional Environmental Officer by calling 303.235.4926 or by email at richard.myers@dhs.gov.

6.1.2 Final Public Notice

Will be added during preparation of the Draft EA.

6.2 PUBLIC COMMENTS

No comments were received during the initial public comment period.

SECTION SEVEN AGENCIES CONSULTED

U.S. Fish and Wildlife Service, Lakewood, CO

Susan Linner, Field Supervisor	(303) 236-4773
Adam Misztal, Endangered Species Specialist	(303) 236-4753
Sandy Vana-Miller, Endangered Species Specialist	(303) 236-4748

U.S. Army Corps of Engineers, Littleton, CO

Terry McKee, Natural Resource Specialist	(303) 979-4120

Colorado Parks and Wildlife, Denver, CO

Brandon Muller, Wildlife Conservation Biologist	(970) 692-9530

Colorado Department of Emergency Management, Centennial, CO

Deanna Butterbaugh, Mitigation Specialist	(720) 852 6697

Colorado Department of Public Health and Environment, Denver, CO

Paul Rusher, Engineering Technician	(303) 692-3100
Michael Harris, Technician	(303) 692-3100

Colorado State Historic Preservation Office, Denver, CO

Ed Nichols, State Historic Preservation Officer	(303) 866-3355

Cheyenne-Arapaho Tribes of OK

Janice Prairie Chief Boswell, Governor	Not available

Northern Cheyenne Tribe, Lame Deer, MT

Leroy Spang, President	Not available

Northern Arapaho, Washakie, WY

Jim L. Shakespeare, Chairman	Not available

SECTION EIGHT REFERENCES

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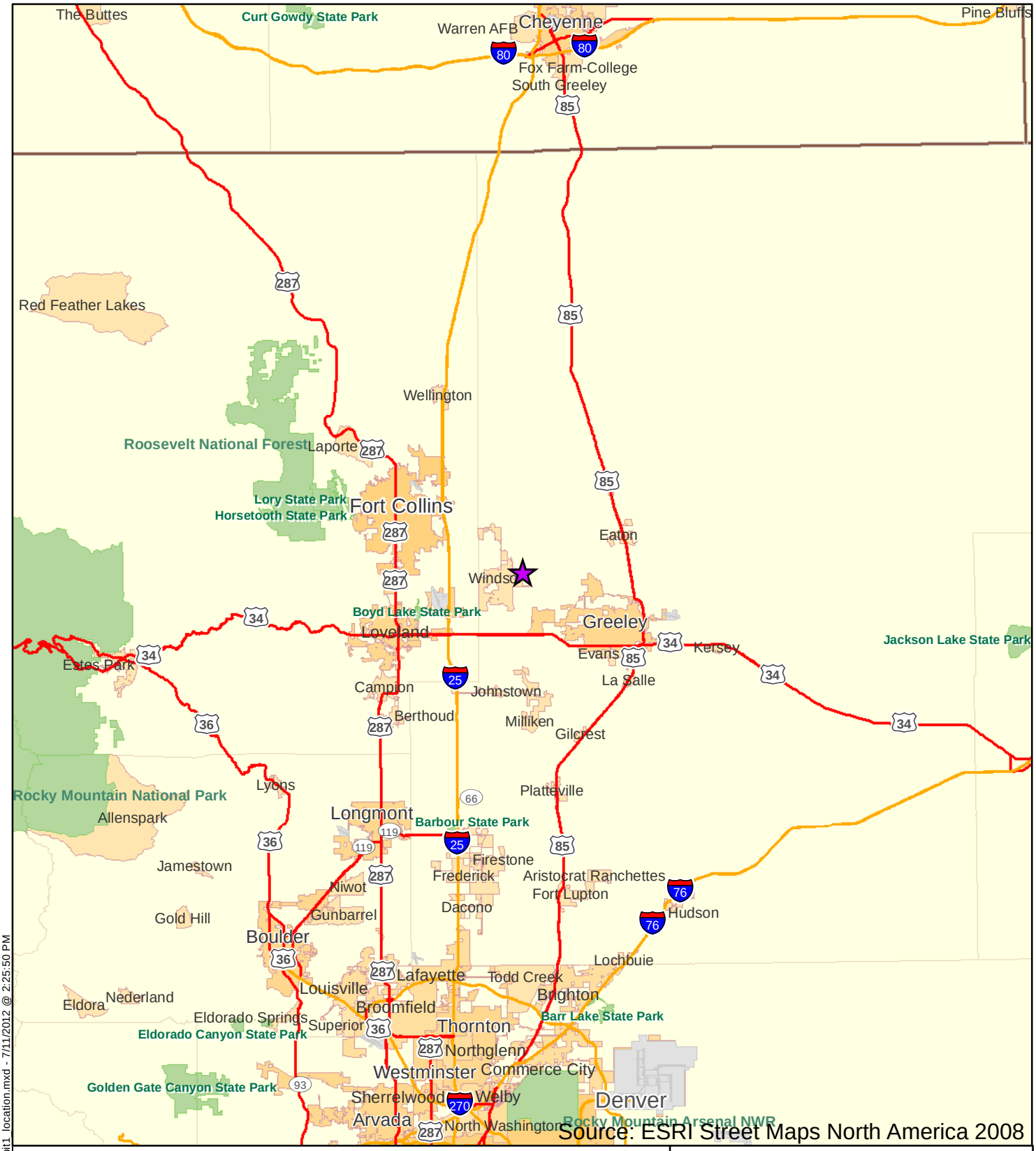
SECTION NINE LIST OF PREPARERS

This EA was prepared by URS Group, Inc., for FEMA Region VIII in Denver, CO.

URS staff includes:

- Quentin Bliss, Senior Environmental Planner
- Susan Volkmer, Environmental Planner
- Gordon Tucker, Ph.D., Archaeologist
- Amy Cherko, Environmental Planner
- Angela Chaisson, CWB, Senior NEPA Reviewer

APPENDIX A
EXHIBITS


The Buttes
Curt Gowdy State Park
Warren AFB
Cheyenne
Pine Bluffs
Fox Farm-College
South Greeley
Red Feather Lakes
Wellington
Roosevelt National Forest
Laporte
Lory State Park
Horsetooth State Park
Fort Collins
Eaton
Windsor
Boyd Lake State Park
Loveland
Greeley
Evans
Kersey
Jackson Lake State Park
Estes Park
Campion
Johnstown
La Salle
Berthoud
Milliken
Gilcrest
Lyons
Rocky Mountain National Park
Allenspark
Platteville
Longmont
Barbour State Park
Jamestown
Firestone
Frederick
Aristocrat Ranchettes
Fort Lupton
Niwot
Dacono
Hudson
Gold Hill
Gunbarrel
Boulder
Lochbuie
Lafayette
Todd Creek
Louisville
Brighton
Nederland
Eldora
Broomfield
Eldorado Springs
Superior
Thornton
Barr Lake State Park
Eldorado Canyon State Park
Northglenn
Westminster
Commerce City
Golden Gate Canyon State Park
Sherrelwood
Welby
Denver
Arvada
North Washington
Rocky Mountain Arsenal NWR
Source: ESRI Street Maps North America 2008
WY
NE
UT
CO
KS
AZ
NM
OK
Legend
Project Location
N
0
60,000
120,000
Feet
FEMA
John Law Ditch
Flood Mitigation Project
Windsor, Colorado
Project Location
Subapplication Number: PDMC-PJ-08-CO-2011-003
Projection: NAD 1983 StatePlane Colorado North FIPS 0501
Exhibit 1
Project No: 15702626
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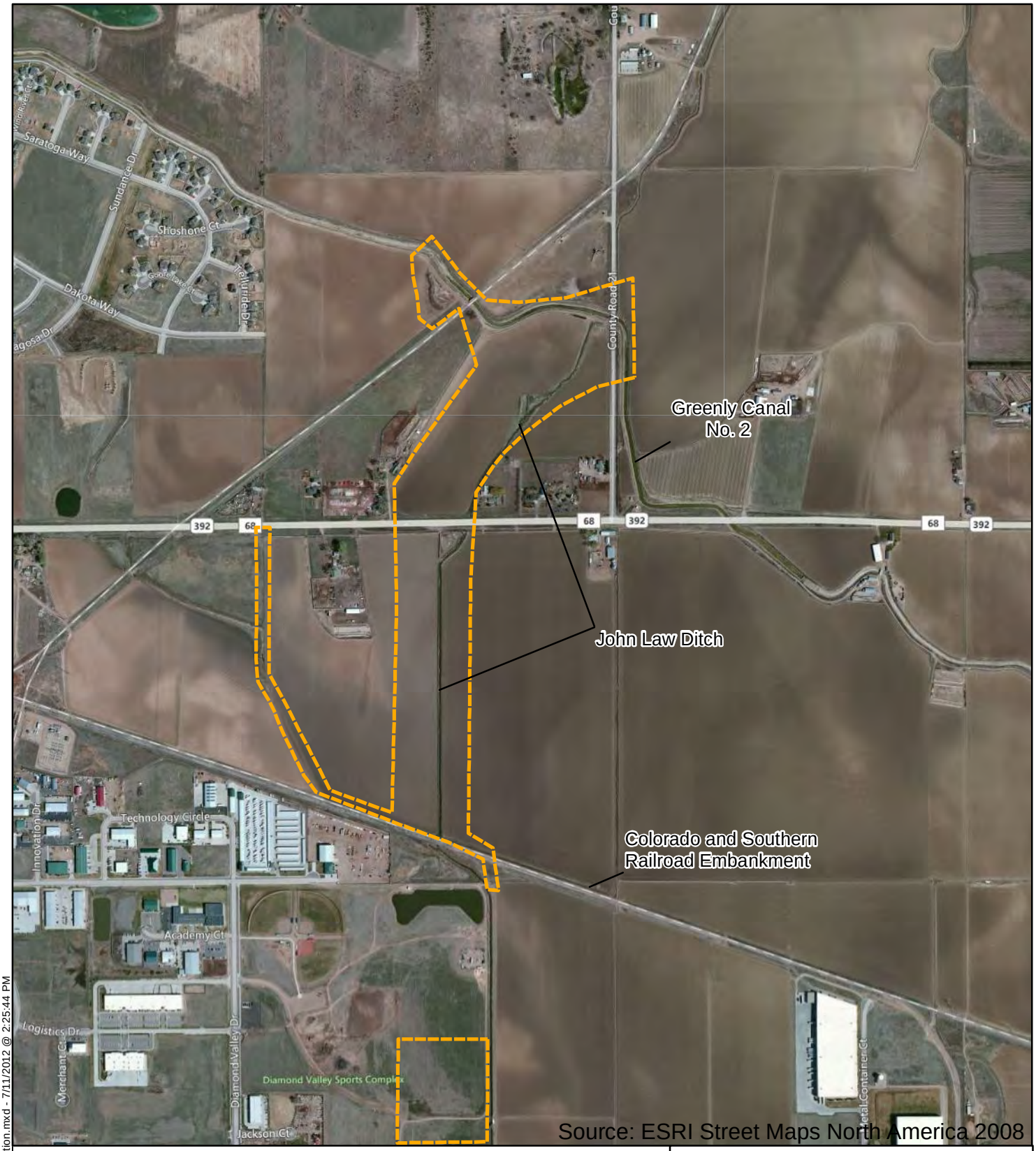

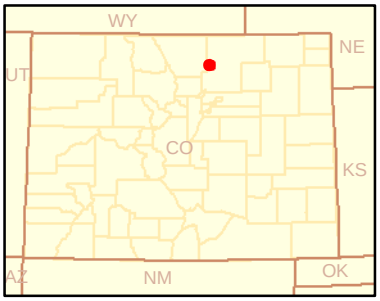

Legend

Project Area

N

0 500 1,000 Feet

FEMA

John Law Ditch
Flood Mitigation Project
Windsor, Colorado

Project Area

Subapplication Number: PDMC-PJ-08-CO-2011-003

Projection: NAD 1983 StatePlane Colorado North FIPS 0501

Project No: 15702626

Exhibit 2

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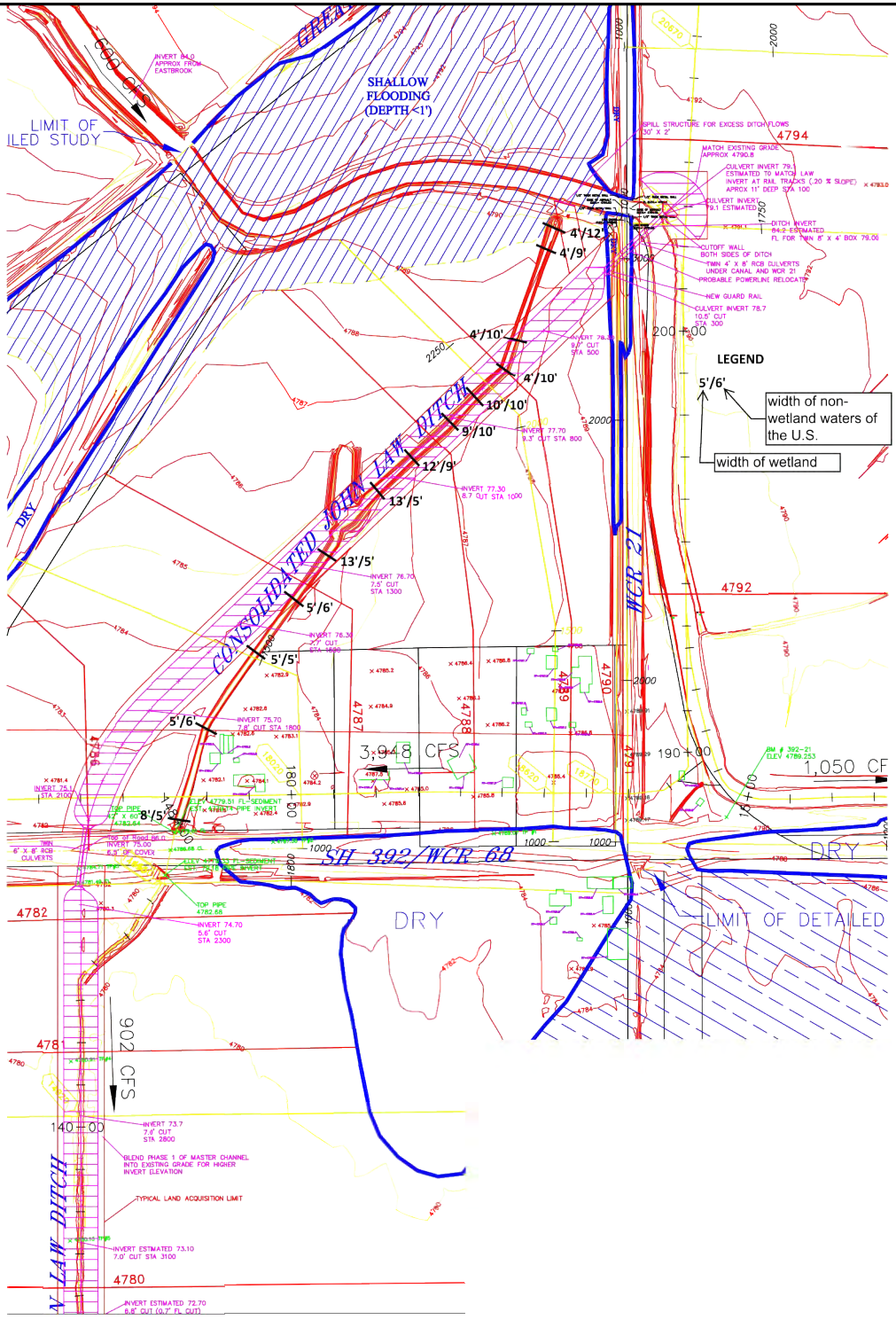

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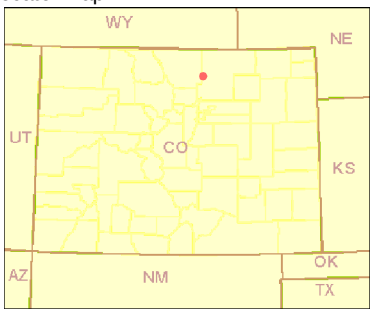

Legend

PROPOSED DRAINAGE IMPROVEMENTS

CORRECTED EFFECTIVE FLOODPLAIN IDENTIFED BY LOMR CASE NO.

Source: FEMA 1997 (Panel 519)

N

FEMA

John Law Ditch Flood Mitigation Project Windsor, Colorado

Preliminary Design and Cross-Section of modified channel

Subapplication Number: PDMC-PJ-08-CO-2011-003

Projection: NAD 1983 UTM Zone 13N

Project No: 15702626

Exhibit 3

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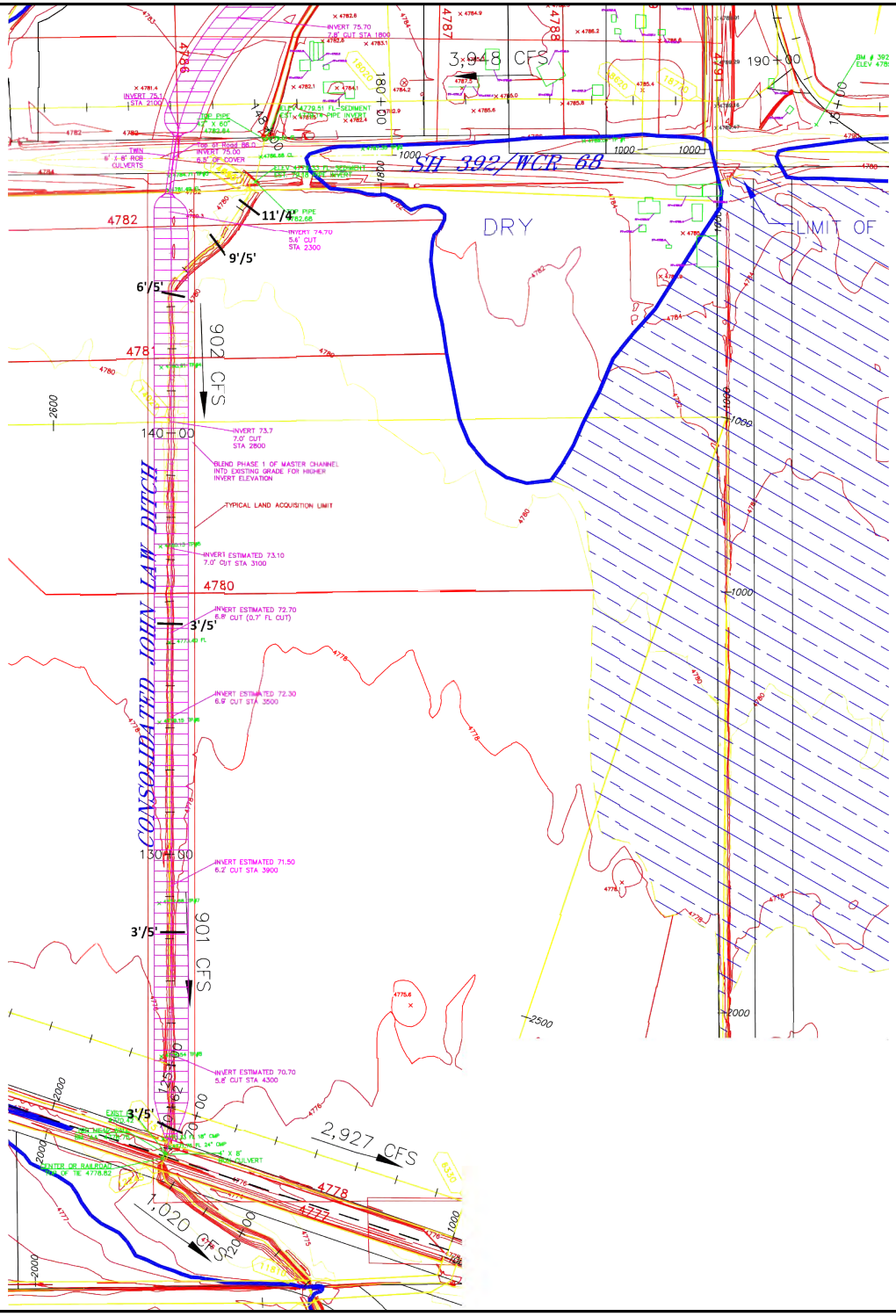

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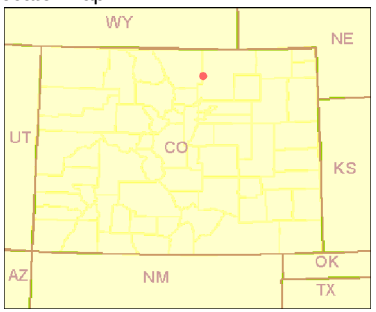

Legend

PROPOSED DRAINAGE IMPROVEMENTS

CORRECTED EFFECTIVE FLOODPLAIN IDENTIFED BY LOMR CASE NO.

Source: FEMA 1997 (Panel 519)

N

FEMA

John Law Ditch Flood Mitigation Project Windsor, Colorado

Preliminary Design and Cross-Section of modified channel

Subapplication Number: PDMC-PJ-08-CO-2011-003

Projection: NAD 1983 UTM Zone 13N

Project No: 15702626

Exhibit 3

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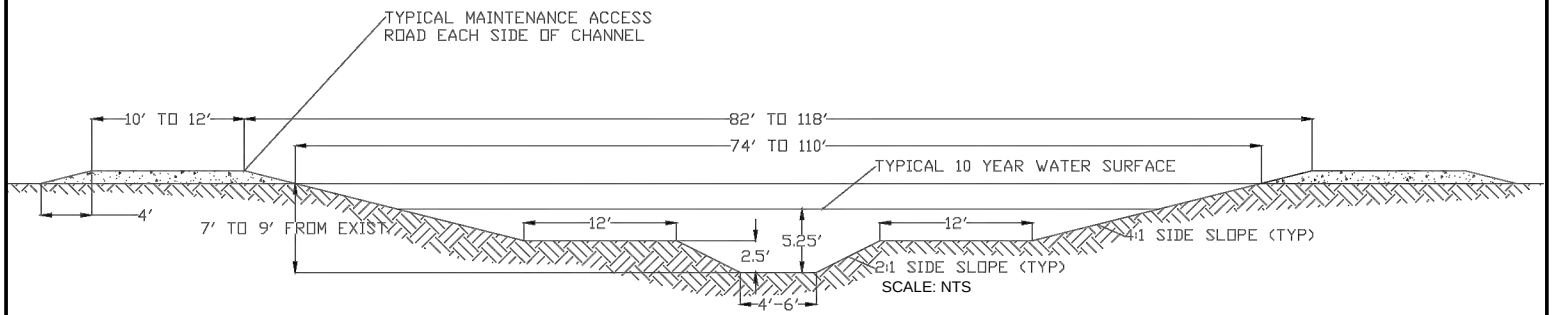

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Locator Map

Source: FEMA 1997 (Panel 519)

FEMA

John Law Ditch Flood Mitigation Project Windsor, Colorado

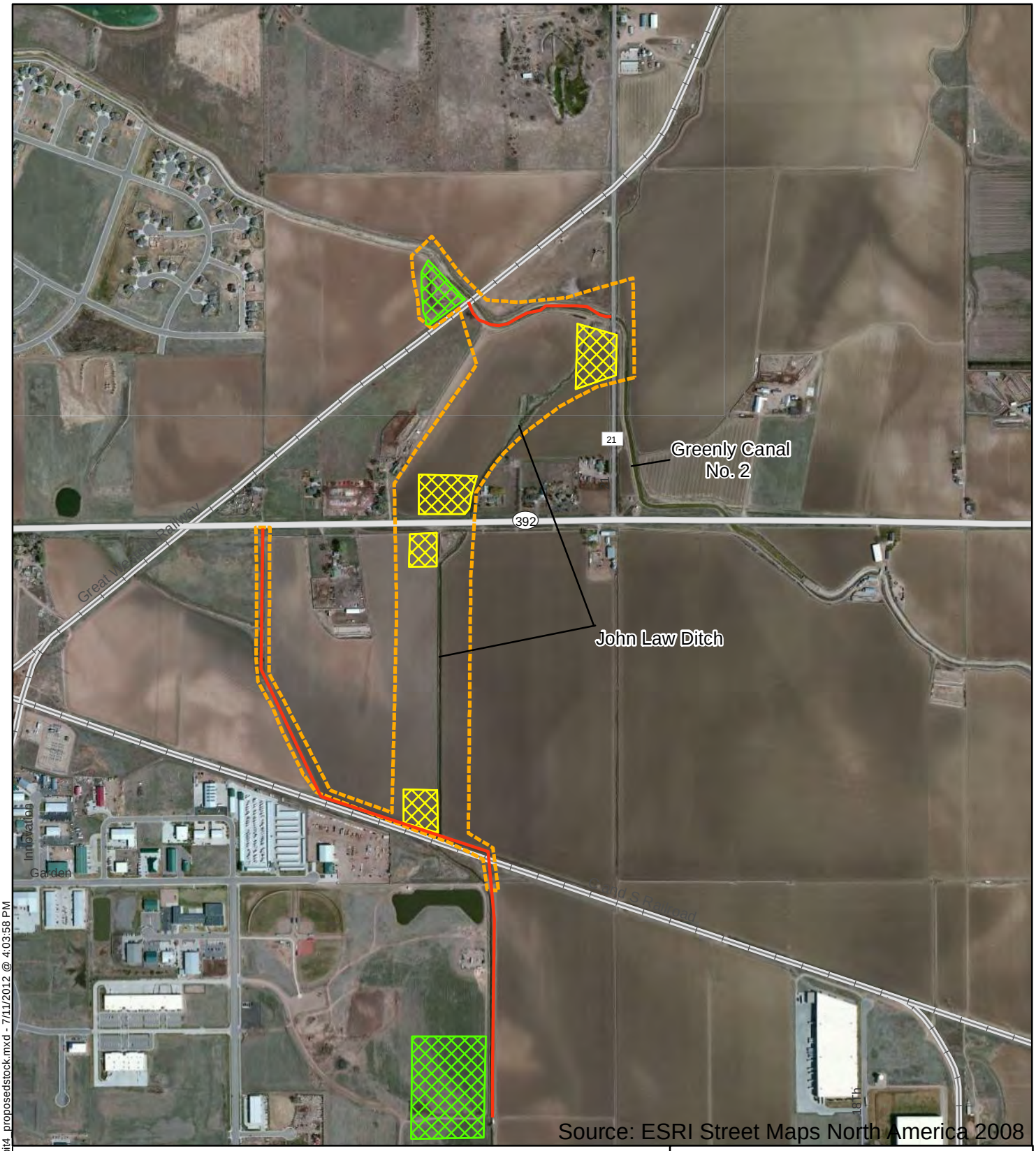
Preliminary Design and Cross-Section of modified channel

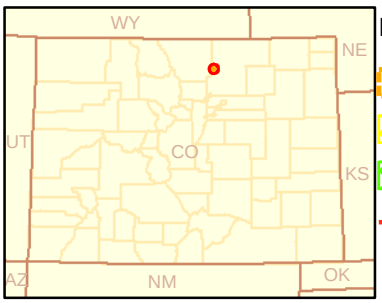
Subapplication Number: PDMC-PJ-08-CO-2011-003

Projection: NAD 1983 UTM Zone 13N

Project No: 15702626

Exhibit 3





Legend

- Project Area
- Proposed Staging Area
- Proposed Stockpile Area
- Proposed Access and Haul Roads

Feet

0 500 1,000

N

FEMA

John Law Ditch
Flood Mitigation Project
Windsor, Colorado

Location of Proposed Stockpile/Staging and Access/Haul Roads

Subapplication Number: PDMC-PJ-08-CO-2011-003

Projection: NAD 1983 StatePlane Colorado North FIPS 0501

Project No: 15702626

Exhibit 4

Z:\fema\Region8_EAs\Windsor\Exhibit4_proposedstock.mxd - 7/11/2012 @ 4:03:58 PM

Upstream of State Highway 392

Upstream of Colorado and Southern Railroad Embankment

Z:\fema\Region8_EAs\Windsor\Exhibit5_Channel.mxd 6/29/2012

FEMA	John Law Ditch Flood Mitigation Project Windsor, Colorado	Existing Channel and Riparian Vegetation Subapplication Number: PDMC-PJ-08-CO-2011-003 Projection: NAD 1983 UTM Zone 13N Project No: 15702626 **Exhibit** 5

APPENDIX B
SITE VISIT PHOTOGRAPHS

APPENDIX B- SITE PHOTOGRAPHS

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No. 1	Date: 03-20-12

Description:

Existing outlet from Greeley No. 2 Canal to John Law Ditch. A new spillway is proposed for this location.

Photo No. 2	Date: 03-20-12

Description:

Looking downstream (south) along the existing ditch from Greeley No. 2 Canal. A new channel segment would be constructed from Weld County Road 21 (out of picture to the left) across farmland and connect to the existing channel near the turn at the center of the photograph.

APPENDIX B- SITE PHOTOGRAPHS

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No. 3	Date: 03-20-12

Description:

Top end of project area looking upstream (north) at John Law Ditch. Greeley No. 2 Canal in foreground. Weld County Road 21 at left.

Photo No. 4	Date: 03-20-12

Description:

Looking upstream (north) at existing ditch from State Highway 392. This segment of the channel may be filled when the channel is realigned. New channel would be located to the west (left).

APPENDIX B- SITE PHOTOGRAPHS

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No. 5	Date: 03-20-12

Description:

Existing ditch looking downstream (south) from State Highway 392. Corral system at right. This segment of the existing ditch may be filled when the channel is realigned. New channel would be located on the west side (right) of the corral.

Photo No. 6	Date: 03-20-12

Description:

Looking upstream (north) along existing ditch from south end of project area near Colorado and Southern Railroad embankment.

APPENDIX B- SITE PHOTOGRAPHS

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No. 7	Date: 03-20-12

Description:

Looking downstream (south) at the existing culvert under the Colorado and Southern Railroad embankment. This is the southern end of the project.

Photo No. 8	Date: 03-20-12

Description:

Utility markers (natural gas line and City of Greeley water line) and overhead power lines located at the southern end of the project area. Colorado and Southern Railroad embankment at left.

APPENDIX C
AGENCY CORRESPONDENCE

RECORD OF CONVERSATION

DATE: April 11, 2012 TIME: 3:00pm JOB NO.: 15702626.04BUP

RECORDED BY: _____ OWNER/CLIENT: FEMA

TALKED WITH: Adam Misztal OF USFWS

NATURE OF CALL: INCOMING ☐ OUTGOING ☒ VISIT ☐ MEETING ☐ PHONE: # 303.236.4753

ROUTE TO: INFORMATION ACTION

_____ _____

_____ _____

_____ _____

MAIN SUBJECT: John Law Ditch Flood Mitigation Project

ITEMS DISCUSSED: I called Adam to discussed the John Law Ditch project. I briefly described the project and stated that we had gotten a species list from IPac. Based on the required habitats for the identified species, I indicated to Adam that the determination was likely to be No Effect. Adam indicated that in general he would agree with that determination. Adam also indicated that we could separate out the flow-depletion species and send a separate determination letter to him for the non-flow depletion species.

URS

RECORD OF CONVERSATION

DATE: April 11, 2012 TIME: 10 am JOB NO.: 15702626.04BUP

RECORDED BY: _____ OWNER/CLIENT: FEMA

TALKED WITH: Sandy Vana-Miller OF USFWS

NATURE OF CALL: INCOMING ☐ OUTGOING ☒ VISIT ☐ MEETING ☐ PHONE: # (303) 236-4778

ROUTE TO: INFORMATION ACTION

MAIN SUBJECT: John Law Ditch Flood Mitigation Project

ITEMS DISCUSSED: I spoke with Sandy about the proposed project in Windsor and briefly explained the project. Sandy indicated her area of focus is on species associated with the flow depletions in the Platte River in Nebraska. Sandy indicated that she needed more information before she could determine whether or not formal Section 7 consultation would be required for the project. I discussed the post-project cross-section of the modified channel and the design of a low-flow channel, indicating that post-project flows would be the same as they are now except during precipitation events up to the 10-year event. Sandy indicated that she would still need more information such as water use from the ditch (acre-feet per year), would new users be added post project, who controls the water rights (i.e. water district, irrigation district), current flow rates, etc). I indicated I would try to get the information. Sandy said emailing the information would be fine.

URS

RECORD OF CONVERSATION

DATE: April 16, 2012 TIME: 2:45 pm JOB NO.: 15702626.04BUP

RECORDED BY: _____ OWNER/CLIENT: FEMA

TALKED WITH: Terry McKee Natural Resource Specialist OF USACE

NATURE OF CALL: INCOMING ☐ OUTGOING ☒ VISIT ☐ MEETING ☐ PHONE: # 303.979.4120

ROUTE TO: INFORMATION ACTION

MAIN SUBJECT: John Law Ditch Flood Mitigation Project

ITEMS DISCUSSED: I provided Terry with a brief description of the project and project location. I told Terry that the grant application includes a preliminary assessment of wetlands and waters of the U.S. (WOUS). According to the preliminary assessment, approximately 1 acre of wetlands and other WOUS would be impacted by the project. Terry indicated that John Law ditch would be considered a WOUS and that with potential impacts greater than 0.5 acre Windsor would need an individual permit. Terry stated that the permit should be sent to Tim Carey, as he (Terry McKee) does not do individual permits. Tim is the Chief of the Regulatory Section Denver Office.

URS

RECORD OF CONVERSATION

DATE: April 17, 2012 TIME: 9:45 am JOB NO.: 15702626.04BUP

RECORDED BY: _____ OWNER/CLIENT: FEMA

TALKED WITH: Paul Rusher OF CDPHE
Engineering Tech

NATURE OF CALL: INCOMING ☐ OUTGOING ☒ VISIT ☐ MEETING ☐ PHONE: # 303.692.3100

ROUTE TO:	INFORMATION	ACTION

MAIN SUBJECT: John Law Ditch Flood Mitigation Project

ITEMS DISCUSSED: I phoned CDPHE regarding any potential air permits that might be required for the project. Paul confirmed that the project area is a non-attainment area for 8hr ozone. Paul also stated no permit would be necessary based on that status. However, a state Air Pollution Permit would be required because the estimated construction period is longer than 6 months. Paul indicated that any future questions regarding details of the permit should be directed to Mr. Kenneth Holden (303) 691-4092.

URS

U.S. Department of Homeland Security
Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267

FEMA

R8-Div

April 24, 2012

Mr. Adam Misztal
U.S. Fish and Wildlife Service
Colorado Ecological Services Office
134 Union Blvd, Suite 670
P.O. Box 25486 DFC
Denver, CO 80225

Re: John Law Ditch Flood Mitigation Project, Windsor, CO
(Latitude 40.47974N; Longitude -104.8749W)

Dear Mr. Misztal:

This letter is a follow-up to our telephone conversation about this project on April 11, 2012. The Federal Emergency Management Agency (FEMA) is in the process of preparing an Environmental Assessment for a proposed Flood Mitigation Project. The project, which is located Windsor, in Weld County is being sponsored by the town of Windsor, through the Colorado Division of Emergency Management. The Proposed Action would include the installation of two concrete box culverts in John Law Ditch including twin 4-foot by 8-foot (200 feet in length) box culverts at Weld County Road (WCR) 21 and twin 6-foot by 8-foot (140 feet in length) at State Highway (SH) 392. In addition, the bottom elevation of the John Law Ditch would be lowered so flood flows associated with floods up to and including the 10-year flood event can be conveyed beneath Greeley Canal No.2. Channel improvements would also be made to approximately 4,000 linear feet of John Law Ditch, including approximately 1,700 feet between WCR 21 and SH 392 and a 2,300-foot section between SH 392 and the Great Western Railway (Colorado & Southern railroad) embankment. Improvements would include widening and realignment of the channel to improve conveyance of stormwater. Realignment would occur immediately upstream and downstream of SH 392. Abandoned segments of the existing channel would be filled in using soil excavated to modify the channel. The modified ditch would be approximately 100 feet wide and range in depth from 3 to 12 feet. Side slopes would be approximately four horizontal feet to one vertical foot (4:1). A low-flow channel, designed to mimic the existing ditch would be constructed in the bottom of the new channel.

A new overflow spillway would be installed on the Greeley No. 2 Canal upstream of the canal's existing junction with WCR 21 and the John Law Ditch. The spillway would allow high

U.S. Department of Homeland Security
Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267

FEMA

flows in the Greeley No. 2 Canal to spill into the reconfigured John Law Ditch. Other project features include the placement of riprap at the road crossing and downgradient of the new spillway, road repair following the installation of the box culverts, utility work involving utilities located in areas that would be disturbed, installation of erosion control measures, revegetation of disturbed areas, and replacement of removed fencing. The project also involves acquisition of agricultural property and conversion of acquired land to non-agricultural uses. Approximately 52,000 cubic yards (CY) of soil would be excavated construct the modified channel. Topsoil would be stockpiled on-site and replaced when construction activities are completed. The project would have a disturbance footprint of approximately 11.2 acres. Excess excavated soil (approximately 43,000 CY) would be stockpiled at an existing city stockpile area. Exhibit 1 shows the location of the proposed project. Photographs of the existing conditions within the project area are also attached.

The U.S. Fish and Wildlife Service's (USFWS) Information Planning and Conservation (IPaC) system was accessed on February 29, 2012 to obtain an official list of federally listed threatened and endangered species that have the potential to occur or could be affected by projects located in Weld County, Colorado.

IPaC indicates the following federally listed species have the potential to occur in or could be affected by a project located in Weld County, CO:

- Preble's meadow jumping mouse (*Zapus hudsonius preblei*) – threatened;
- Least tern [*Sternula antillarum*] - endangered
- Mexican spotted owl (*Strix occidentals lucida*)- threatened;
- Piping plover [*Charadrius melodus*] – threatened
- Whooping crane [*Grus americana*] - endangered
- Pallid sturgeon [*Scaphirhynchus albus*] - endangered
- Western prairie fringed orchid [*Platanthera praeclara*] – threatened
- Colorado butterfly plant (*Gaura neomexicana coloradensis*) – threatened;
- Ute ladies'-tresses (*Spiranthes diluvialis*) – threatened;

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Denver, CO 80225-0267

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The least tern, piping plover, whooping crane, pallid sturgeon, and western prairie fringed orchid do not occur in Weld County, CO. However, water depletions within the South Platte River basin may affect these species and/or their critical habitat associated with the Platte River in Nebraska. Potential impacts to these five species is being addressed in separate discussions with Sandy Vana-Miller of your office.

Habitat requirements and designated critical habitat for each of the four remaining threatened or endangered species, which have the potential to occur in Weld County, are discussed briefly in the following paragraphs.

Preble's meadow jumping mouse. The distribution range of the Preble's meadow jumping mouse includes the northern Front Range of Colorado and southeastern Wyoming. The USFWS indicates the Preble's meadow jumping mouse has the potential to occur in Weld County. Typical habitat for the mouse is wet meadows and well developed riparian vegetation in the vicinity of a water source. Generally, their preferred habitat includes a relatively dense combination of grasses, forbs, and shrubs. The Preble's meadow jumping mice regularly range out from the riparian/wet meadow habitat into adjacent upland habitat to feed and to hibernate. The mouse feeds on a wide range of vegetation depending on the habitat they are occupying and the season of the year. Reported food items in their diet include insects, seeds, fungus, fruit, and more. The project area does not contain any wet meadow areas or well developed riparian vegetation. Since the project area does not contain the type of habitat that would be utilized by the species, FEMA has determined that the proposed project activities would have **No Effect** on the Preble's meadow jumping mouse.

Mexican spotted owl. Old growth or mature forests that contain complex structural components (uneven aged stands, high canopy closure, multi-storied levels, and high tree density) are the primary habitat used by the Mexican spotted owl. Canyons with riparian or conifer communities can also represent important habitat for the spotted owl. The USFWS and CDOW both indicate the Mexican spotted owl has the potential to occur in Weld County. However, the project area is located entirely within agricultural fields and the surrounding area is developed as urban or suburban housing and agricultural fields, the type of habitat used by the Mexican spotted owl is not located in the project area or vicinity. Therefore, FEMA has determined that the proposed project would have **No Effect** on the Mexican spotted owl.

Colorado butterfly plant. The Colorado butterfly plant occurs at elevations between 5,000 and 6,400 feet. Within this elevation band, it occurs on sub-irrigated, alluvial soils within floodplains and drainage bottoms. The species requires early- to mid-succession riparian habitat that is void of dense

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or overgrown vegetation. It is an early successional species that is adapted to stream channel sites that are periodically disturbed by flood events. In fact, without periodic disturbances, occupied habitat can become chocked with willows, grasses, and exotic species, which can contribute to the demise of the species at that location. Windsor is located at approximately 4,800 feet above mean sea level which below the preferred elevation. Additionally, the project area and surrounding areas are primarily agricultural fields and associated farmsteads. No wet meadow type habitat is present in the project area. Since the preferred elevation and type of habitat that would be used by the species is not present in the project area, FEMA has determined the proposed project would have **No Effect** the Colorado butterfly plant.

Ute ladies'-tresses. The Ute ladies'-tresses is a perennial terrestrial orchid that occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist wet meadows that are normally associated with a perennial streams. Within the project area, John Law Ditch flows through cultivated agricultural fields. The project area does not contain any gravel bars, ox-bows, high flow channels, or moist wet meadows. Since the project area does not contain habitat that would be utilized by the Ute ladies' tresses, FEMA has determined that the proposed project would have **No Effect** on the Ute ladies'-tresses.

The CDOW is also being contacted regarding state-listed threatened and endangered species in Weld County.

Based on the information provided and discussed above, FEMA has made a determination that the proposed John Law Ditch Flood Mitigation Project located in Weld County near Windsor, Colorado would have "No Effect" on the four listed species that have the potential to occur in Weld County.

If you have questions or concerns, please contact me at (303) 235-4926 or Sue Volkmer at (402) 952-2547.

Sincerely,

Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

Enclosure (3)

Legend

Project Area

N

Feet

0 500 1,000

FEMA

John Law Ditch
Flood Mitigation Project
Windsor, Colorado

Project Area

Subapplication Number: PDMC-PJ-08-CO-2011-003

Projection: NAD 1983 StatePlane Colorado North FIPS 0501

Project No: 15702626

Exhibit 1

Z:\fema\Region8_EAs\Woodland_Park\Exhibit1_location.mxd

Attachment

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No.	Date:
1	03-20-12

Description:

Looking downstream (south) from Greeley No. 2 Canal.

Photo No.	Date:
2	03-20-12

Description:

Looking upstream (north) from State Highway 392.

Attachment

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No.	Date:
3	03-20-12

Description:

Looking downstream (south) from SH 392.

Photo No.	Date:
4	03-20-12

Description:

Looking upstream (north) from just upstream of the Colorado and Southern Railroad Embankment.

Volkmer, Susan

From: Shoup, William - NRCS, Denver, CO <william.shoup@co.usda.gov>
Sent: Thursday, April 26, 2012 3:56 PM
To: Volkmer, Susan
Cc: Shoup, William - NRCS, Denver, CO
Subject: Prime Farmland Conversion 26April2012
Attachments: John Law Ditch Flood Mitigation Project PFL Conversion.pdf

Susan Volkmer,
Please find form NRCS AD-1006 for your conversion of 11.9 Acres of Prime Farmland located in Weld County Colorado, attached.
Thank you,

William Shoup
Assistant State Soil Scientist
Denver, Colorado
USDA - NRCS

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 4/24/12
Name Of Project John Law Ditch Flood Mitigation Project	Federal Agency Involved Federal Emergency Management Agency
Proposed Land Use Flood Control / Floodplain	County And State Weld County, Colorado
PART II *(To be completed by NRCS)*	Date Request Received By NRCS 4/24/12

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).* Yes ☑ No ☐

Acres Irrigated 327.836 | Average Farm Size 533

Major Crop(s) LE value not based on an indicato | Farmable Land In Govt. Jurisdiction Acres: 2,088,715 % 81 | Amount Of Farmland As Defined in FPPA Acres: 1,575,538 % 61

Name Of Land Evaluation System Used: Colorado NRCS LE | Name Of Local Site Assessment System: None | Date Land Evaluation Returned By NRCS: 4/26/12

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	11.9			
B. Total Acres To Be Converted Indirectly	0.0			
C. Total Acres In Site	11.9	0.0	0.0	0.0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	11.9			
B. Total Acres Statewide And Local Important Farmland	0.0			
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.1			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	13.8			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	90	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use		10			
2. Perimeter In Nonurban Use		9			
3. Percent Of Site Being Farmed		20			
4. Protection Provided By State And Local Government		0			
5. Distance From Urban Builtup Area		0			
6. Distance To Urban Support Services		0			
7. Size Of Present Farm Unit Compared To Average		10			
8. Creation Of Nonfarmable Farmland		5			
9. Availability Of Farm Support Services		5			
10. On-Farm Investments		10			
11. Effects Of Conversion On Farm Support Services		0			
12. Compatibility With Existing Agricultural Use		0			
TOTAL SITE ASSESSMENT POINTS	160	69	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	90	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	69	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	159	0	0	0

Site Selected: Site A | Date Of Selection 4/26/12 | Was A Local Site Assessment Used? Yes ☐ No ☒

Reason For Selection:

(See Instructions on reverse side)

Form AD-1006 (10-83)

This form was electronically produced by National Production Services Staff

Volkmer, Susan

From: Volkmer, Susan
Sent: Friday, May 04, 2012 1:16 PM
To: 'brandon.muller@state.co.us'
Subject: John Law Ditch Flood Mitigation Project - Windsor, Colorado
Attachments: Exhibit1_location.pdf; Appendix B - Site Photographs- reduced.pdf

Mr. Brandon Muller
Colorado Parks and Wildlife
Northeast Regional Office
317 W Prospect
Fort Collins, Colorado 80526

Re: State Threatened and Endangered Wildlife, John Law Ditch Flood Mitigation Project, near Windsor, CO (40.47974N; -104.8749W).

Brandon:

This letter is a follow-up to our conversation on May 3, 2012. URS Corporation, on behalf of the Federal Emergency Management Agency (FEMA), is preparing an Environmental Assessment for the John Law Ditch Flood Mitigation Project near Windsor in Weld County, Colorado. Exhibit 1 shows the project area located approximately 1 mile east of Windsor. Photographs of the project area are also enclosed. The Proposed Action would include the installation of two concrete box culverts in John Law Ditch including twin 4-foot by 8-foot (200 feet in length) box culverts at Weld County Road (WCR) 21 and twin 6-foot by 8-foot (140 feet in length) at State Highway (SH) 392. In addition, the bottom elevation of the John Law Ditch would be lowered so flood flows associated with floods up to and including the 10-year flood event can be conveyed beneath Greeley Canal No.2. Channel improvements would also be made to approximately 4,000 linear feet of John Law Ditch, including approximately 1,700 feet between WCR 21 and SH 392 and a 2,300-foot section between SH 392 and the Great Western Railway (Colorado & Southern railroad) embankment. Improvements would include widening and realignment of the channel to improve conveyance of stormwater. Realignment would occur immediately upstream and downstream of SH 392. Abandoned segments of the existing channel be filled in using soil excavated to modify the channel. The modified ditch would be approximately 100 feet wide and range in depth from 3 to 12 feet. Side slopes would be approximately four horizontal feet to one vertical foot (4:1). A low-flow channel, designed to mimic the existing ditch would be constructed in the bottom of the new channel.

A new overflow spillway would be installed on the Greeley No. 2 Canal upstream of the canal's existing junction with WCR 21 and the John Law Ditch. The spillway would allow high flows in the Greeley No. 2 Canal to spill into the reconfigured John Law Ditch. Other project features include the placement of riprap at the road crossing and downgradient of the new spillway, road repair following the installation of the box culverts, utility work involving utilities located in areas that would be disturbed, installation of erosion control measures, revegetation of disturbed areas, and replacement of removed fencing. The project also involves acquisition of agricultural property and conversion of acquired land to non-agricultural uses. Approximately 52,000 cubic yards (CY) of soil would be excavated construct the modified channel. Topsoil would be stockpiled on-site and replaced when construction activities are completed. The project would have a disturbance footprint of approximately 11.2 acres. Excess excavated soil (approximately 43,000 CY) would be stockpiled at an existing city stockpile area.

The Colorado Parks and Wildlife (CPW) and Natural Diversity Information Source (NDIS) websites were accessed on February 29 and April 5, 2012 to obtain an official list of state listed threatened and endangered species that have potential to occur in Weld County, Colorado. Information from the CPW and NDIS websites and Woodling's *Colorado's little fish – A guide to the minnows and other lesser known fishes in the state of Colorado* was used to determine the potential for state-listed species to occur in Weld County, CO. FEMA is currently coordinating with the U.S. Fish and Wildlife Service (USFWS) regarding federally listed threatened and endangered species for Weld County. The USFWS has indicated that they have no concerns regarding the project and non-flow depletion species (Preble's meadow jumping mouse, Mexican spotted owl, Colorado butterfly plant, and Ute ladies' tresses). FEMA continues to coordinate with the USFWS on potential flow-depletion species (least tern, piping plover, pallid sturgeon, western prairie fringed orchid, and whooping crane). Flow depletions are not expected with this project.

The following represent state threatened and endangered species which are not also federally listed for Weld County, CO:

- River otter (*Lontra Canadensis*) – State threatened;
- Black-footed ferret (*Mustela nigripes*) – State threatened;
- Plains sharp-tailed grouse (*Tympanuchus phasianellus jamesii*) – State endangered;
- Western Burrowing Owl (*Athene cunicularia*) – State threatened;
- Suckermouth minnow (*Phenacobius mirabilis*) – State endangered;
- Brassy minnow (*Hybognathus hankinsoni*) – State threatened;

The proposed project is located in agricultural fields and is surrounded by rural development of farmsteads. The town of Windsor is located approximately 1 mile west of the project area. Habitat requirements for each of the threatened or endangered species are discussed briefly in the following paragraphs.

River Otter. River otters use riparian habitat, where aquatic animals like crayfish, frogs, fish, young muskrats and beavers are favored foods. Otters usually live in bank dens abandoned by beavers. The project area does not contain habitat utilized by the river otter; therefore, it has been determined that the river otter would not be affected by proposed project activities.

Black-footed ferret. The black-footed ferret utilized prairie dog tunnels and preys on the prairie dogs. The project area is an irrigation ditch surrounded by agricultural fields. No prairie dog colonies occur within or in the immediate vicinity of the project area; therefore, it has been determined that the black-footed ferret would not be affected by proposed project activities.

Plains sharp-tailed grouse. The bird utilizes rolling hills with scrub oak thickets and grassy glades. As an equivalent to sagebrush, they use scrub oaks, serviceberries and willows. The bird typically occupies medium to tall grasslands for courtship and nesting. These habitat types are not located within the project area; therefore, it has been determined that the plains sharp-tailed grouse would not be affected by proposed project activities.

Western Burrowing Owl. The owl is primarily found in grasslands and mountain parks, usually in or near prairie dog towns. The burrowing owl also uses well-drained, steppes, deserts, prairies and agricultural lands. The project area is located entirely within cultivated fields and the surrounding area is developed as urban or suburban housing and agricultural fields. The type of habitat used by the western burrowing owl is not located in the project area or vicinity; therefore, it has been determined that western burrowing owl would not be affected by proposed project activities.

Suckermouth minnow. The fish is usually found in riffle areas of warm prairie streams of all sizes with low to moderate currents and year-round flows and has the potential to occur in the county. Although the fish is known to occur in Weld County, the irrigation ditch does not provide the required habitat for this species;

therefore, it has been determined that the suckermouth minnow would not be affected by proposed project activities.

Brassy minnow. The fish requires areas of cool, clear water with abundant aquatic vegetation and a gravel substrate overlaid by organic sediment. Although Weld County is within the known range for the brassy minnow, the irrigation ditch does not provide adequate habitat for the fish; therefore, it has been determined that the brassy minnow would not be affected by proposed project activities.

Based on the information provided and discussed above, it has been determined that none of the listed state species with the potential to occur in Weld County would be affected by the proposed John Law Ditch Flood Mitigation Project near Windsor, in Weld County, Colorado. Please review the project information and let me know if you have any concerns regarding state listed threatened and endangered species. Response via email would be adequate.

If you need additional information or have questions, please call me at (402) 952-2547.

Sue Volkmer
Senior Environmental Scientist
URS Corporation-Omaha

Legend

Project Area

N

Feet

0 500 1,000

FEMA

John Law Ditch
Flood Mitigation Project
Windsor, Colorado

Project Area

Subapplication Number: PDMC-PJ-08-CO-2011-003

Projection: NAD 1983 StatePlane Colorado North FIPS 0501

Project No: 15702626

Exhibit 1

Z:\fema\Region8_EAs\Woodland_Park\Exhibit1_location.mxd

Attachment

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No.	Date:
1	03-20-12

Description:

Looking downstream (south) from Greeley No. 2 Canal.

Photo No.	Date:
2	03-20-12

Description:

Looking upstream (north) from State Highway 392.

Attachment

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No.	Date:
3	03-20-12

Description:

Looking downstream (south) from SH 392.

Photo No.	Date:
4	03-20-12

Description:

Looking upstream (north) from just upstream of the Colorado and Southern Railroad Embankment.

RECORD OF CONVERSATION

DATE: 6/5/12 TIME: 1500 JOB NO.: 15702626.04 BUP

RECORDED BY: Quentin Bliss OWNER/CLIENT: FEMA - Town of Windsor

TALKED WITH: Ms. Sandy Vana-Miller OF USFWS

NATURE OF CALL: INCOMING ☒ OUTGOING ☐ VISIT ☐ MEETING ☐ PHONE: # (303) 236-4748

ROUTE TO: INFORMATION ACTION

MAIN SUBJECT: T+E Species - Depletions in Platte River in Nebraska

ITEMS DISCUSSED: Ms. Vana Miller returned by call to her that I made last week. She could only faintly remember the conversation she had with Sue Volkmer on Apr. 11, 2012. I indicated that we had contacted the applicant to provide the information she requested. Her initial questions was who is using the water in the ditch and I said we have been told that the ditch only provides water for one farmer and when that farmer makes a call for water, it is released from Greeley #2 Canal. She ask if the farmer had consulted with USFWS regarding depletions in the South Platte/Platte River System. I said that I did not know as our task was to determine the effect(s) that moving the channel and changing the geometry of the channel. She than ask who owned the water/controlled the water in Greeley No. 2 Canal. Again I said I did not know. She then quickly reminded me that will any federal involvement, the ASFW consultation with USFWS (her) was required. I said that I believed that FEMA would indicate an "No Effect". She said that USFWS does not provide concurrence with No Effect determinations. I said it would be provided for their files. She said send it to her supervisor (Susan Linner).

URS

Volkmer, Susan

From: Muller, Brandon <Brandon.Muller@state.co.us>
Sent: Friday, June 15, 2012 11:44 AM
To: Volkmer, Susan
Subject: RE: John Law Ditch Flood Mitigation Project - Windsor, Colorado

Susan,

I agree that there is no state threatened species that will be impacted by this project.

Brandon

From: Volkmer, Susan [mailto:susan.volkmer@urs.com]
Sent: Friday, May 04, 2012 12:16 PM
To: Muller, Brandon
Subject: John Law Ditch Flood Mitigation Project - Windsor, Colorado

Mr. Brandon Muller
Colorado Parks and Wildlife
Northeast Regional Office
317 W Prospect
Fort Collins, Colorado 80526

Re: State Threatened and Endangered Wildlife, John Law Ditch Flood Mitigation Project, near Windsor, CO (40.47974N; -104.8749W).

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If you need additional information or have questions, please call me at (402) 952-2547.

Sue Volkmer
Senior Environmental Scientist
URS Corporation-Omaha

U.S. Department of Homeland Security
Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267

FEMA

R8-Div

June 14, 2012

Ms. Susan Linner
U.S. Fish and Wildlife Service
Colorado Ecological Services Office
134 Union Blvd, Suite 670
P.O. Box 25486 DFC
Denver, CO 80225

Re: Westerly Creek Flood Mitigation Project, Aurora, CO
(Latitude 39.44502; Longitude -104. 52474)

Dear Ms. Linner:

The Federal Emergency Management Agency (FEMA) is in the process of preparing an Environmental Assessment for a proposed Flood Mitigation Project. The project, which is located in Adams County, is being sponsored by Aurora, through the Colorado Division of Emergency Management. This letter is a follow-up to URS Corporation's telephone conversation Ms. Sandy Vana-Miller about this project on June 5, 2012. URS Corporation is the Federal Emergency Management Agency's (FEMA) contractor for this project.

The proposed project involves Westerly Creek within Montview Park and Westerly Creek Park (both are located in the City of Aurora). Exhibits 1 and 2 show the general project location and the perimeter of the Westerly Creek Flood Mitigation project area, respectively. Photographs of the existing conditions within the project area are also attached. The proposed project involves replacing twin box culverts at Montview Boulevard with a 60-foot bridge, lowering the channel beneath the road, constructing two drop structures within the creek, and improving approximately 2,700 linear feet of the Westerly Creek channel (Latitude 39.44502; Longitude -104. 52474) in Adams County. Approximately 6 acres of soil would be disturbed by the channel improvements, construction of the drop structures, and replacement of the box culverts with the 60-foot bridge. Additionally, 12,000 cubic yards of soil would be removed during the excavation for the new bridge and modification of the stream channel.

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The U.S. Fish and Wildlife Service's (USFWS) Information Planning and Conservation (IPaC) system was accessed on March 16 to obtain an official list of federally listed threatened and endangered species that have the potential to occur or could be affected by projects located in Adams County, Colorado.

IPaC indicates the following federally listed species have the potential to occur in or be affected by a project located in Adams County, CO:

- Preble's meadow jumping mouse (*Zapus hudsonius preblei*) – threatened;
- Least tern (*Sternula antillarum)* - endangered
- Mexican spotted owl (*Strix occidentals lucida*)- threatened;
- Piping plover (*Charadrius melodus)* – threatened
- Whooping crane (*Grus americana*) - endangered
- Pallid sturgeon (*Scaphirhynchus albus)* - endangered
- Western prairie fringed orchid (*Platanthera praeclara)* – threatened
- Colorado butterfly plant (*Gaura neomexicana coloradensis*) – threatened; and
- Ute ladies'-tresses (*Spiranthes diluvialis*) – threatened.

The least tern, piping plover, whooping crane, pallid sturgeon, and western prairie fringed orchid do not occur in Adams County, CO. However, water depletions within the South Platte River basin may affect these species and/or their critical habitat associated with the Platte River in Nebraska. The replacement of the twin box culverts with a 60 foot span bridge and changing the geometry of the stream channel within the project area to convey flows up to and including the 10-year flow event without flooding existing structures would not result in any flood depletions within the South Platte River or Platte River. Therefore, FEMA has determined that the proposed project would have No Effect on these five federally-listed threatened and endangered species.

Habitat requirements and designated critical habitat for each of the four remaining threatened or endangered species, which have the potential to occur in Adams County, are discussed briefly in the following paragraphs.

Preble's meadow jumping mouse. The distribution range of the Preble's meadow jumping mouse includes the northern Front Range of Colorado and southeastern Wyoming. The USFWS indicates the Preble's meadow jumping mouse has the potential to occur in Adams County; however, the Colorado Parks and Wildlife (CPW) indicates the Preble's meadow jumping mouse has been known to occur in Adams County but has been extirpated. The CPW also indicates the mouse has the potential to occur in Jefferson County, which abuts Adams County. Typical habitat for the mouse is

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wet meadows and well developed riparian vegetation in the vicinity of a water source. Generally, their preferred habitat includes a relatively dense combination of grasses, forbs, and shrubs. The Preble's meadow jumping mouse regularly ranges out from the riparian/wet meadow habitat into adjacent upland habitat to feed and to hibernate. The mouse feeds on a wide range of vegetation that depends on the habitat they are occupying and the season of the year. Reported food items in their diet include insects, seeds, fungus, and fruit. The hibernation period for the Preble's meadow jumping mouse extends from September/October to May. The USFWS listed the species primarily due to the rapid loss of their habitat along the Front Range in Colorado associated with development on private lands. Development activities involving wetlands, wet meadows, closure of irrigation canals and ditches represent potential loss of habitat for the Preble's meadow jumping mouse. Designated critical habitat for the Preble meadow jumping mouse is located west of Aurora/Adams County. The project area does not contain any wet meadow areas or well developed riparian vegetation. Since the project area does not contain the type of habitat that would be utilized by the species, FEMA has determined that the proposed project activities would have No Effect on the Preble's meadow jumping mouse.

Mexican spotted owl. Old growth or mature forests that contain complex structural components (uneven aged stands, high canopy closure, multi-storied levels, and high tree density) are the primary habitat used by the Mexican spotted owl. Canyons with riparian or conifer communities can also represent important habitat for the spotted owl. The USFWS and CPW both indicate the Mexican spotted owl has the potential to occur in Adams County. Although designated critical habitat is located in Jefferson County (which abuts Adams County), no designated critical habitat for the Mexican spotted owl is located in Adams County. Since the project area is located entirely within two urban parks, the type of habitat used by the Mexican spotted owl is not located in the project area. Therefore, FEMA has determined that the proposed project would have No Effect on the Mexican spotted owl.

Colorado butterfly plant. The Colorado butterfly plant occurs at elevations between 5,000 and 6,400 feet. Within this elevation band, it occurs on sub-irrigated, alluvial soils within floodplains and drainage bottoms. The species requires early- to mid-succession riparian habitat that is void of dense or overgrown vegetation. It is an early successional species that is adapted to stream channel sites that are periodically disturbed by flood events. In fact, without periodic disturbances, occupied habitat can become chocked with willows, grasses, and exotic species, which can contribute to the demise of the species at that location. The USFWS indicates that the most immediate and severe threat to the species is the effect of residential and urban development. Although the project area elevation is within the range for the habitat of the Colorado butterfly plant; the project area and surrounding areas has experienced a high level of urban development/disturbance and no wet

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meadow type habitat is present in the project area. The type of habitat used by the species, is not present in the project area. Therefore, FEMA has determined the proposed project would have No Effect the Colorado butterfly plant.

Ute ladies'-tresses. The Ute ladies'-tresses is a perennial terrestrial orchid that occurs along riparian edges, gravel bars, old oxbows, high flow channels, and moist wet meadows that are normally associated with a perennial streams. Within the project area, Westerly Creek has been re-aligned throughout both parks, the banks have been landscaped, and most of the riparian vegetation is maintained in a manner that is typical of vegetation within an urban park setting. Presently, the project area does not contain any gravel bars, ox-bows, high flow channels, or moist wet meadows. Since the project area does not contain habitat that would be utilized by the Ute ladies' tresses, FEMA has determined that the proposed project would have No Effect on the Ute ladies'-tresses.

In summary, based on the information provided and discussed for the nine federally-listed threatened and endangered species, FEMA has made a No Effect for all nine species in regard to the flood mitigation project located on Westerly Creek in Aurora (Adams County), Colorado. This letter is meant to serve as notification of the project and of FEMA's determination. No response letter is necessary.

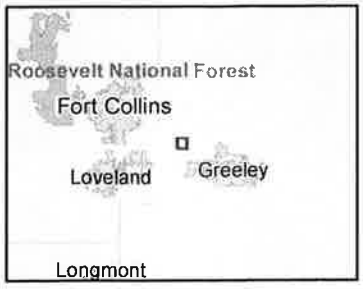
The Colorado Parks & Wildlife is also being contacted regarding state-listed threatened and endangered species in Adams County.

If you need additional information or have concerns, please contact me at (303) 235-4926 or Sue Volkmer at (402) 952-2528.

Sincerely,

Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

Enclosure (3)



Legend

Project Area

N

Feet
0 500 1,000

FEMA

John Law Ditch
Flood Mitigation Project
Windsor, Colorado

Project Area

Subapplication Number: PDMC-PJ-08-CO-2011-003

Projection: NAD 1983 StatePlane Colorado North FIPS 0501

Project No: 15702626

Exhibit 1

Z:\fema\Region8_EAs\Woodland_Park\Exhibit1_location.mxd

Attachment

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No.	Date:
1	03-20-12

Description:

Looking downstream (south) from Greeley No. 2 Canal.

Photo No.	Date:
2	03-20-12

Description:

Looking upstream (north) from State Highway 392.

Attachment

Client Name:	Project:	Project No.
Town of Windsor, Colorado	John Law Ditch Flood Mitigation Project	15702626

Photo No.	Date:
3	03-20-12

Description:

Looking downstream (south) from SH 392.

Photo No.	Date:
4	03-20-12

Description:

Looking upstream (north) from just upstream of the Colorado and Southern Railroad Embankment.

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R8-EHP

August 24, 2012

Mr. Ed Nichols
State Historic Preservation Officer
History Colorado
1200 Broadway
Denver, Colorado 80203

RE: JOHN LAW DITCH FLOOD MITIGATION PROJECT, WELD COUNTY, COLORADO, FEMA PDMC-PJ-08-CO-2011-003

Dear Mr. Nichols:

Weld County Colorado has applied for funding under the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), Pre-Disaster Mitigation (PDM) competitive grant program, which provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. The purpose of this letter is to initiate and conclude consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA), as implemented by 36 CFR Part 800.

At the request of the Federal Emergency Management Agency (FEMA), URS Group, Inc. prepared for your review the enclosed cultural resources survey report entitled *John Law Ditch Flood Mitigation Project, Weld County, Colorado: Results of an Intensive Cultural Resources Inventory*

Undertaking

The City of Windsor is proposing to improve 4,000 linear feet of the unlined Consolidated Law Ditch in Weld County, Colorado. The project, which totals approximately 50 acres, would include installing concrete box culverts at Weld County Road (WCR) 21 and State Highway (SH) 392. In addition, the bottom elevation of the Consolidated Law Ditch would be lowered so flood flows associated with floods can be conveyed beneath Greeley Canal No. 2. The ditch would also be widened and realigned to improve conveyance of stormwater; segments of the existing channel would be filled in using soil excavated to modify the channel. A new overflow spillway would be installed on the Greeley No. 2 Canal upstream of the canal's existing junction with WCR 21 and the Consolidated Law Ditch. Other project features include the placement of riprap at the road crossing and down-gradient of the new spillway, road repair following the installation of the box culverts, utility work in areas that would be disturbed, installation of erosion control measures, revegetation of disturbed areas, and replacement of removed fencing. Weld County has filed an application with the FEMA)for partial funding for this this project. FEMA is required under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, to take into account the effects of its actions on historic properties.

Area of Potential Effects

The APE is defined as the approximately 50-acre area that will be directly affected by the project components, including staging areas, stockpile areas, and access roads (existing). The APE for indirect effects is similar to the APE for direct effects, but addresses potential visual impacts, which in this instance were found to be non-existent because the project does not have any permanent above-grade obstructions that would alter the existing field of vision. Visual impacts are possible during construction, but those impacts would be temporary. The attached report contains a map (Figure 1-1) depicting the APE.

Identification of Historic Properties

The survey documented seven cultural resources: a segment of the Great Western Railroad (**5WL841.17**), a segment of the Greeley No. 2 Canal (**5WL842.21**), a segment of the Colorado and Southern Railway's Greeley to Stout Branch (**5WL1043.11**), a previously recorded county road bridge (**5WL3047**), a segment of the John Law Ditch (**5WL7241.1**), a segment of the Consolidated Law Ditch (**5WL7222.1**), and an isolated historic artifact (**5WL7221**). All of these cultural resources were evaluated by cultural resource professionals who meet or exceed the Secretary of Interior's standards for archaeology and architectural history. FEMA has determined that all sites, except the county road bridge (**5WL3047**) and the isolated historic artifact (**5WL7221**), are recommended eligible for listing in the National Register of Historic Places (NRHP), under Criterion A. These cultural resources, both as a whole and as individual segments, retain sufficient integrity to convey the eligibility of the entire larger linear resource of which they are a part. The bridge (**5WL3047**) retains only limited physical integrity, is not associated with any significant person(s) or event(s), does not represent a distinct style or type of bridge, and is unlikely to provide any additional significant information about the local history. The isolated find is unlikely to provide any additional significant information about the local history.

Determination of Effects

The proposed undertaking will not adversely affect the cultural resources recommended eligible for listing in the NRHP. In fact, the proposed improvements will help reduce erosion and provide greater stability to the irrigation ditches and associated resources, thereby providing a beneficial effect. The actions of this project are consistent with the activities involved in maintaining the features and keeping them functioning efficiently and safely, just as they were originally intended to function, as they still function, and as they will continue to function, except with updated (modern) components and engineering standards.

FEMA believes that the background research and enclosed cultural resource report represent a reasonable and good faith effort to carry out appropriate identification efforts as stated in 36 CFR Part 800.4. Based on this information, and in accordance with the Section 106 of the National Historic Preservation Act and its implementing regulation (36 CFR Part 800.5) FEMA has determined will be **'no adverse effect to historic properties'** as a result of the proposed action.

We respectfully seek your concurrence with these determinations of eligibility and effect. If previously unknown cultural resources are discovered during construction, work will be stopped, and FEMA and your office will be notified as soon as possible. If you have questions about any of the information contained in this letter or require additional information, please contact me by telephone at (303) 235-4926 or by e-mail at richard.myers@dhs.gov.

Sincerely,

Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

cc: Gordon Tucker, URS Denver

Attachment: *John Law Ditch Flood Mitigation Project, Weld County, Colorado: Results Of An Intensive Cultural Resources Inventory* (August, 2012, Juston Fariello)

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R8-EHP

August 28, 2012

Ms. Janice Prairie Chief Boswell, Governor
Cheyenne and Arapaho Tribes, Oklahoma
Office of the Tribal Council
P.O. Box 38
Concho, OK 73022

**RE: JOHN LAW DITCH FLOOD MITIGATION PROJECT,
WELD COUNTY, COLORADO, FEMA PDMC-PJ-08-CO-2011-003**

Dear Governor Boswell:

Weld County Colorado has applied for funding under the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), Pre-Disaster Mitigation (PDM) competitive grant program, which provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. The purpose of this letter is to initiate and conclude consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA), as implemented by 36 CFR Part 800.

At the request of FEMA, URS Group, Inc. prepared for your review the enclosed cultural resources survey report entitled *John Law Ditch Flood Mitigation Project, Weld County, Colorado: Results of an Intensive Cultural Resources Inventory*

Undertaking

The City of Windsor is proposing to improve 4,000 linear feet of the unlined Consolidated Law Ditch in Weld County, Colorado. The project, which totals approximately 50 acres, would include installing concrete box culverts at Weld County Road (WCR) 21 and State Highway (SH) 392. In addition, the bottom elevation of the Consolidated Law Ditch would be lowered so flood flows associated with floods can be conveyed beneath Greeley Canal No. 2. The ditch would also be widened and realigned to improve conveyance of stormwater; segments of the existing channel would be filled in using soil excavated to modify the channel. A new overflow spillway would be installed on the Greeley No. 2 Canal upstream of the canal's existing junction with WCR 21 and the Consolidated Law Ditch. Other project features include the placement of riprap at the road crossing and down-gradient of the new spillway, road repair following the installation of the box culverts, utility work in areas that would be disturbed, installation of erosion control measures, revegetation of disturbed areas, and replacement of removed fencing. Weld County has filed an application with the FEMA) for partial funding for this this project. FEMA is required under Section 106 of the NHPA of 1966, as amended, to take into account the effects of its actions on historic properties.

Area of Potential Effects (APE)

The APE is defined as the approximately 50-acre area that will be directly affected by the project components, including staging areas, stockpile areas, and access roads (existing). The APE for indirect effects is similar to the APE for direct effects, but addresses potential visual impacts, which in this instance were found to be non-existent because the project does not have any permanent above-grade obstructions that would alter the existing field of vision. Visual impacts are possible during construction, but those impacts would be temporary. The attached report contains a map (Figure 1-1) depicting the APE.

Identification of Historic Properties

The survey documented seven cultural resources: a segment of the Great Western Railroad (**5WL841.17**), a segment of the Greeley No. 2 Canal (**5WL842.21**), a segment of the Colorado and Southern Railway's Greeley to Stout Branch (**5WL1043.11**), a previously recorded county road bridge (**5WL3047**), a segment of the John Law Ditch (**5WL7241.1**), a segment of the Consolidated Law Ditch (**5WL7222.1**), and an isolated historic artifact (**5WL7221**). All of these cultural resources were evaluated by cultural resource professionals who meet or exceed the Secretary of Interior's standards for archaeology and architectural history. FEMA has determined that all sites, except the county road bridge (**5WL3047**) and the isolated historic artifact (**5WL7221**), are eligible for listing in the National Register of Historic Places (NRHP), under Criterion A. These cultural resources, both as a whole and as individual segments, retain sufficient integrity to convey the eligibility of the entire larger linear resource of which they are a part. The bridge (**5WL3047**) retains only limited physical integrity, is not associated with any significant person(s) or event(s), does not represent a distinct style or type of bridge, and is unlikely to provide any additional significant information about the local history. The isolated find is unlikely to provide any additional significant information about the local history.

Determination of Effects

In FEMA's opinion, the proposed undertaking will not adversely affect the cultural resources recommended eligible for listing in the NRHP and will not further detract from the linear resources of which they are part. This section of the John Law Ditch has already undergone significant physical disturbance, as the channel has been the subject of erosion and substantial prior and ongoing construction activity. It is highly unlikely that any eligible, intact archaeological historic properties are present within the APE. The proposed improvements will help reduce erosion and provide greater stability to the irrigation ditches and associated resources, thereby protecting existing resources in the future. If previously unknown cultural resources are discovered, work will be stopped, and FEMA, the Colorado SHPO and your office will be notified as soon as possible.

FEMA believes that the background research and enclosed cultural resource report represent a reasonable and good faith effort to carry out appropriate identification efforts as stated in 36 CFR Part 800.4. Based on this information, and in accordance with the Section 106 of the National Historic Preservation Act and its implementing regulation (36 CFR Part 800.5) FEMA has determined will be **'no adverse effect to historic properties'** as a result of the proposed action.

FEMA respectfully seeks your comments on potential impacts to archaeological sites, burials, and traditional cultural properties in or near the project area that are of importance to you or your tribe. If you have questions about any of the information contained in this letter or require additional information, please contact me by telephone at (303) 235-4926 or by e-mail at richard.myers@dhs.gov.

Sincerely,

Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

cc: Gordon Tucker, URS Denver

Attachment: *John Law Ditch Flood Mitigation Project, Weld County, Colorado: Results Of An Intensive Cultural Resources Inventory* (August, 2012, Juston Fariello)

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Denver Federal Center, Building 710
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FEMA

R8-EHP

August 28, 2012

Mr. Jim L. Shakespeare, Chairman
Northern Arapaho Tribe
P.O. Box 396
Washakie, Wyoming 82514

**RE: JOHN LAW DITCH FLOOD MITIGATION PROJECT,
WELD COUNTY, COLORADO, FEMA PDMC-PJ-08-CO-2011-003**

Dear Chairman Shakespeare:

Weld County Colorado has applied for funding under the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), Pre-Disaster Mitigation (PDM) competitive grant program, which provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. The purpose of this letter is to initiate and conclude consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA), as implemented by 36 CFR Part 800.

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Area of Potential Effects (APE)

The APE is defined as the approximately 50-acre area that will be directly affected by the project components, including staging areas, stockpile areas, and access roads (existing). The APE for indirect effects is similar to the APE for direct effects, but addresses potential visual impacts, which in this instance were found to be non-existent because the project does not have any permanent above-grade obstructions that would alter the existing field of vision. Visual impacts are possible during construction, but those impacts would be temporary. The attached report contains a map (Figure 1-1) depicting the APE.

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Determination of Effects

In FEMA's opinion, the proposed undertaking will not adversely affect the cultural resources recommended eligible for listing in the NRHP and will not further detract from the linear resources of which they are part. This section of the John Law Ditch has already undergone significant physical disturbance, as the channel has been the subject of erosion and substantial prior and ongoing construction activity. It is highly unlikely that any eligible, intact archaeological historic properties are present within the APE. The proposed improvements will help reduce erosion and provide greater stability to the irrigation ditches and associated resources, thereby protecting existing resources in the future. If previously unknown cultural resources are discovered, work will be stopped, and FEMA, the Colorado SHPO and your office will be notified as soon as possible.

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Sincerely,

Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

cc: Gordon Tucker, URS Denver

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Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, CO 80225-0267

FEMA

R8-EHP

August 28, 2012

Mr. Leroy Spang, President
Northern Cheyenne Tribe
P.O. Box 128
Lame Deer, MT 59043

**RE: JOHN LAW DITCH FLOOD MITIGATION PROJECT,
WELD COUNTY, COLORADO, FEMA PDMC-PJ-08-CO-2011-003**

Dear President Spang:

Weld County Colorado has applied for funding under the Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA), Pre-Disaster Mitigation (PDM) competitive grant program, which provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. The purpose of this letter is to initiate and conclude consultation pursuant to Section 106 of the National Historic Preservation Act (NHPA), as implemented by 36 CFR Part 800.

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In FEMA's opinion, the proposed undertaking will not adversely affect the cultural resources recommended eligible for listing in the NRHP and will not further detract from the linear resources of which they are part. This section of the John Law Ditch has already undergone significant physical disturbance, as the channel has been the subject of erosion and substantial prior and ongoing construction activity. It is highly unlikely that any eligible, intact archaeological historic properties are present within the APE. The proposed improvements will help reduce erosion and provide greater stability to the irrigation ditches and associated resources, thereby protecting existing resources in the future. If previously unknown cultural resources are discovered, work will be stopped, and FEMA, the Colorado SHPO and your office will be notified as soon as possible.

FEMA believes that the background research and enclosed cultural resource report represent a reasonable and good faith effort to carry out appropriate identification efforts as stated in 36 CFR Part 800.4. Based on this information, and in accordance with the Section 106 of the National Historic Preservation Act and its implementing regulation (36 CFR Part 800.5) FEMA has determined will be **'no adverse effect to historic properties'** as a result of the proposed action.

FEMA respectfully seeks your comments on potential impacts to archaeological sites, burials, and traditional cultural properties in or near the project area that are of importance to you or your tribe. If you have questions about any of the information contained in this letter or require additional information, please contact me by telephone at (303) 235-4926 or by e-mail at richard.myers@dhs.gov.

Sincerely,

Richard Myers
Deputy Regional Environmental Officer
FEMA Region VIII

cc: Gordon Tucker, URS Denver

Attachment: *John Law Ditch Flood Mitigation Project, Weld County, Colorado: Results Of An Intensive Cultural Resources Inventory* (August, 2012, Juston Fariello)

HISTORY Colorado

October 17, 2012

Richard Myers
Deputy Regional Environmental Officer
Federal Emergency Management Agency
U.S. Department of Homeland Security, Region VIII
Denver Federal Center, Building 710
P.O. Box 25267
Denver, Colorado 80225-0267

Re: John Law Ditch Flood Mitigation Project, Weld County, Colorado, FEMA PDMC-PJ-08-CO-2011-003 (CHS #62899)

Dear Mr. Myers:

Thank you for your correspondence dated August 24, 2012 (received by our office on October 15, 2012) regarding the subject project.

Following our review of the documentation provided, we concur with your determination that linear segments 5WL842.21, 5WL1043.11, 5WL7222.1, and 5WL7241.1 support the overall eligibility of the entire resource. We concur with your determination that linear segment 5WL841.17 does not support the eligibility of the entire linear resource. We concur with your determination that site 5WL3047 and isolated find 5WL7221 are not eligible for the National Register of Historic Places.

We are unable to concur that a finding of 'no adverse effect to historic properties' is appropriate for the proposed undertaking. The consultation letter indicates that 4,000 linear feet of the National Register eligible Consolidated Law Ditch (site 5WL7222) will be extensively modified by the proposed undertaking. Anticipated changes to the Consolidated Law Ditch include, but are not limited to, the lowering of the channel elevation along with widening, realigning, and infilling portions of the existing channel. Furthermore, a new spillway is proposed for the National Register eligible Greely No. 2 Canal (site 5WL842). According to 36 CFR 800.5(a)(1), "an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association." Further, according to 36 CFR 800.5(a)(2), examples of adverse effects include, but are not limited to (i) physical destruction or damage to all or part of the property and (iii) removal of the property from its historic location.

Management recommendations provided within the report and site forms advise either avoidance or additional work to "mitigate any adverse effects" for the recorded segments of the Consolidated Law Ditch and Greely No. 2 Canal. However, FEMA concludes that the proposed improvements "are consistent with the activities involved in maintaining the features and keeping them functioning efficiently and safely, just as they were originally intended to function, as they still function, and as they will continue to function, except with updated (modern) components and engineering standards" and that the project will result in no adverse effect. However, as demonstrated above, we believe that this is not the appropriate regulatory application of the definition of adverse effect.

Please remember that the consultation process does involve other consulting parties such as local governments and Tribes, which as stipulated in 36 CFR 800.3 are required to be notified of the undertaking. Additional information provided by the local government, Tribes or other consulting parties may cause our office to re-evaluate our comments and recommendations.

Thank you for the opportunity to comment and we look forward to continued consultation on the subject undertaking. If we may be of further assistance please contact Mark Tobias, Section 106 Compliance Manager, at (303) 866-4674 or mark.tobias@state.co.us.

Sincerely,

for Edward C. Nichols
State Historic Preservation Officer
ECN/MAT

APPENDIX D
EIGHT-STEP DECISION-MAKING PROCESS

JOHN LAW DITCH FLOOD MITIGATION PROJECT

Executive Order 11988 – Floodplain Management

Executive Order 11990 – Protection of Wetlands

Eight-Step Decision Making Process

Executive Order 11988 (Floodplain Management) requires Federal agencies "to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of the floodplain and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative."

Executive Order (EO) 11990 (Protection of Wetlands) requires Federal agencies "to avoid construction or management practices that would adversely affect wetlands unless that agency finds that (1) there is no practicable alternative, and (2) the proposed action includes measures to minimize harm to the wetlands." The EO directs all Federal agencies to minimize the destruction, loss, or degradation of wetlands and preserve and enhance the natural beneficial values of wetlands in the conduct of the agency's responsibilities. FEMA's implementing regulations for the EOs are at 44 CFR Part 9, which includes an eight-step decision making process for compliance with this part of the Executive Order.

This eight-step process is being applied to the John Law Ditch Flood Mitigation Project as the proposed project is located in the 100-year floodplain of John Law Ditch and includes activities in wetlands. The steps in the decision-making process are as follows.

Step 1 Determine if the proposed action is located in the base floodplain and/or a wetland.

The John Law Ditch Flood Mitigation Project involves the modification (widening and deepening) of an irrigation ditch and the installation of box culverts under two roads within the identified base floodplain (according to FEMA Flood Insurance Rate Map (FIRM) Weld County, Colorado, Unincorporated Areas; 0802660605D, Effective date September 27, 1991; revised December 14, 2009 by LOMR).

A preliminary wetland assessment determined that the irrigation ditch contains wetlands along its banks and channel bottom.

Step 2 Early Public Notice (Initial Public Notice).

A public notice concerning the John Law Ditch Flood Mitigation Project was published in the *Windsor Beacon* on April 6, 11, and 13, 2012. The *Windsor Beacon* is the local newspaper for the Windsor area, which includes the floodplain and wetland area of John Law Ditch. No comments were received on the project during the initial public comment period.

Step 3 Identify and evaluate alternatives to locating in the base floodplain and/or wetlands.

Alternatives to the Proposed Action that were considered included upstream detention, acquisition and demolition of structures in the floodplain, construction of a new ditch, and the No Action Alternative. The upstream portions of the 29 square mile drainage basin were investigated for opportunities for flood control storage. One irrigation reservoir (Black Hallow) was identified as a possible facility for flood control storage. A benefit-cost analysis was completed for this facility as part of a joint study between the Town of Windsor and Town of Severance aimed at identifying improvements in the Law Drainage Basin that would reduce flood risk and have a benefit-cost ratio of equal to or greater than 1.0. The benefit-cost analysis determined that a flood storage pool added to the reservoir was not cost effective.

With the acquisition and demolition of structures within the existing 100-year floodplain alternative, properties would be purchased and the structures demolished, thus removing them from the floodplain. This alternative would reduce property damages associated with future flood events, as there would be no structures within the floodplain that could be inundated by flood waters. This alternative was considered to be cost prohibitive and unfavorable to the public. Plus the alternative would not address flooding of the heavily used State Highway 392 and a busy county road (Weld County Road 21).

A new conveyance channel could be constructed in the vicinity of the project area that would avoid existing wetlands. Acquisition of agricultural land is costly, and constructing a new ditch could segment farm fields and redirect existing water flows to a new drainage.

The No Action Alternative involves taking no steps to reduce the risk of future flooding from precipitation event up to the 10-year event. However, this alternative does not meet the purpose and need for the project.

Based on the alternatives analysis, it was concluded that the most practicable alternative to reduce potential flood risks in the proposed project area would involve activities within the floodplain and wetlands.

Step 4 Identify impacts of proposed action associated with occupancy or modification of the floodplain.

<u>Impact on natural function of the floodplain</u>
The Proposed Action would modify (widen and deepen) two segments of the John Law Ditch between Weld County Road 21 and State Highway 392 and between State Highway 392 and the Colorado & Southern Railroad embankment. Twin box culverts would be installed under each road. The Proposed Action would capture and more efficiently convey stormwater flows associated with the 10-year precipitation event. The John Law Ditch Flood Mitigation Project would not adversely affect the functions or values of the 100-year floodplain, as none of the proposed project features that would be constructed would deter or redirect 100-year event flows in the John Law Ditch. The Proposed Action includes the construction of a low-flow channel that

would mimic the current ditch configuration. During a 100-year event, the floodplain would function as it currently does within the project area.

The re-contoured channel banks will be re-seeded with a mixture of native grasses. This type of vegetation is similar to the existing bank vegetation and would not impede flood flows.

Impact of floodwater on the proposed facilities
The proposed project features have been designed to convey flows associated with a 10-year flood event (10-percent-annual-risk of flooding) within the channel of the John Law Ditch. Flood flows greater than a 10-year event would exceed the conveyance capacity of the modified channel and box culverts and move through the project area as they do now. It would be expected that minor maintenance/repairs may be needed following a major flood event.

Impact on wetlands
The proposed action would widen and deepen the existing John Law Ditch. The project would also realign the channel immediately upstream and downstream of State Highway 392. The existing channel and associated wetlands within these two segments would be filled in and the area returned to agricultural uses. Approximately 0.41 acre of wetlands would be affected by the modification of the existing channel. An additional 0.11 acre of wetland would be drained and filled as a result of the realignment of the ditch.

Post-project, the modified channel would include 4 to 1 side slopes and a low-flow channel in the bottom that would mimic the existing channel configuration. This low-flow channel would be designed to allow the growth of wetland vegetation. Additionally, the modified channel banks could also allow the development of wetlands. Therefore, no net loss of wetlands and waters of the United States (WOUS) is anticipated with this project.

Step 5 Design or modify the proposed action to minimize threats to life and property and preserve its natural and beneficial floodplain values.

The John Law Ditch Flood Mitigation Project would have no adverse impact on the 100-year floodplain. Although construction of proposed project features would result in disturbances within the base floodplain, none of the features are above-ground structures. Therefore, project features will not impede or redirect base flood (100-year) flows of the John Law Ditch. Although the project is designed to reduce the potential for residential properties to flood during a 10-year event (10-percent-annual-risk of flooding), the Proposed Action would have no impact on flooding associated with the 100-year event (1-percent-annual-risk of flooding).

Post-project, the modified channel would include 4 to 1 side slopes and a low-flow channel in the bottom that would mimic the existing channel configuration. This low-flow channel would be designed to allow the channel bottom to return to pre-project conditions, including wetlands. Additionally, the modified channel banks with 4 to 1 side slopes could also allow the development of wetlands. Therefore, the Proposed Action would compensate wetland impacts on site, to the extent practicable.

Step 6 Re-evaluate the proposed action.

The proposed project would not expose any segment of the population to increased flood hazards because it does not alter the 100-year floodplain and does not include any above-ground structures. Additionally, the Proposed Action will not facilitate development in the floodplain to any greater degree than non-floodplain areas of the community. The project will not aggravate the current flood hazard because project features would not impede or redirect 100-year flood flows. The project will not disturb floodplain values because it will not change water levels in the floodplain and will not reduce habitat in the floodplain. Additionally, the Proposed Action has been designed to compensate/mitigate wetland impacts on site, to the extent practicable, by constructing a low-flow channel and laying back the channel banks. Therefore, it is practicable to construct the proposed project within the floodplain and wetlands, and the Proposed Action satisfies the identified purpose and needs.

Neither the No Action Alternative nor the three action alternatives that were evaluated and dismissed are practicable alternatives.

Step 7 Finding and public explanation (Final Public Notice).

After reviewing the alternatives report prepared by Windsor and evaluating existing conditions within the project area, FEMA has determined that there is no practicable alternative to locating project features within the 100-year floodplain and wetlands of the John Law Ditch. This determination will be conveyed to the public in the final public notice that will be published in the local newspaper.

Step 8 Implement the action.

The proposed John Law Ditch Flood Mitigation Project will be constructed in accordance with applicable floodplain development requirements and in accordance with applicable regulations. A U.S. Army Corps of Engineers (USACE) Section 404 Individual Permit must be obtained prior to beginning construction associated with the project. Compliance with all stipulations stated in the USACE Section 404 permit is required for this project.

APPENDIX E
MEMORANDUM OF AGREEMENT

MEMORANDUM OF AGREEMENT

Among the Federal Emergency Management Agency,
The Colorado State Historic Preservation Officer,
The Colorado Office of Emergency Management,
And the Town of Windsor Colorado
Submitted to the Advisory Council on Historic Preservation
Regarding Resolution of Adverse Effects to Historic Properties in the Town of Windsor resulting from the John Law Ditch Flood Mitigation Project

WHEREAS, the Federal Emergency Management Agency (FEMA) of the Department of Homeland Security proposes to administer Federal disaster assistance pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended, to the Town of Windsor (Applicant) through the Colorado Office of Emergency Management (OEM), under the Pre-Disaster Mitigation Grant Program (PDM), for drainage improvements required as part of the John Law Ditch Flood Mitigation Project in Weld County, CO (Undertaking); and

WHEREAS, FEMA and the Colorado State Historic Preservation Officer (SHPO), pursuant to the regulations found in 36 CFR Part 800 implementing Section 106 of the National Historic Preservation Act (NHPA) 16 U.S.C. § 470f, have concurred that the Consolidated Law Ditch and the Greeley No. 2 Canal are eligible for listing in the National Register of Historic Places and have determined this Undertaking will adversely affect those properties; and

WHEREAS, FEMA has consulted with the OEM and the Applicant regarding the effects of the Undertaking on these historic properties; and

WHEREAS, in accordance with 36 CFR § 800.6(a)(1), FEMA has notified the Advisory Council on Historic Preservation (ACHP) of its adverse effect determination with specified documentation and the ACHP has chosen not to participate on the consultation pursuant to 36 CFR§ 800.6(a)(1)(iii);

NOW, THEREFORE, FEMA, the SHPO, OEM, and the Applicant agree that resolution of the Undertaking's adverse effects will be achieved through implementation of the following stipulations.

I. Stipulations

To the extent of its authority and in coordination with the SHPO, OEM, and the Applicant, FEMA will ensure that for those segments of the Consolidated Law Ditch (Site 5WL7222.1) and the Greeley No. 2 Canal (Site 5WL842.21) proposed for improvement or modification:

A. Level II Documentation will be conducted in accordance with the guidance found in 'Historic Resource Documentation, Standards for Level I, II and III Documentation' (Office of Archaeology and Historic Preservation Publication 1595, October 2007) prior to the start of construction. Documentation shall include:

   i. Historic Narrative describing pertinent information on the historic context of these and other related segments of the impacted linear resources.

   ii. Measured Drawings that clearly identify the location of the existing drainage system(s) and the proposed modifications (e.g., realignment, infilling, widening, elevation changes, etc.), and include photo reference points.

   iii. Archival-quality photographs, in 4-x-6 format, including a digital copy of the images and a photo inventory submitted on an archival quality CD.

B. A summary report, including the referenced Level II documentation, will be prepared pursuant to Stipulation 1A above.

C. A copy of the draft summary report will be submitted to SHPO, who shall review and provide comments within 30 calendar days of receipt. Once accepted by SHPO, SHPO shall receive a minimum of one archival quality copy of the final recordation for its files and provide documentation of acceptance.

D. Activity prescribed by the stipulations of this MOA shall be carried out by or under the direct supervision of a persons or persons meeting, at minimum, the Secretary of the Interior Professional Qualification Standards (48 FR 44738-39)(PQS) in the appropriated discipline. This does not preclude the use of properly supervised persons who do not meet the PQS.

II. Duration

This agreement will be null and void if its terms are not carried out within one year from the date of its execution, or as otherwise indicated. Requests for reasonable extension will be considered. Prior to such time, FEMA may consult with the other signatories to reconsider the terms of the agreement and amend it in accordance with Stipulation V below.

III. Post-Review Discoveries

If previously unidentified historic properties or archaeological resources are discovered, or unanticipated effects on historic properties are found, during ground-disturbing work related to the Undertaking, the Applicant will stop that portion of the project immediately, contact FEMA, the OEM, and the SHPO, and satisfy the requirements of 36 CFR § 800.13.

IV. Dispute Resolution

A. If any objection or dispute should arise within the time frame provided by this MOA to any plans, specifications, or actions provided for review pursuant to this MOA, FEMA will consult further with the objecting party to seek resolution.

B. If FEMA determines that the dispute cannot be resolved, FEMA shall forward all documentation relevant to the dispute to the ACHP in accordance with 36 CFR § 800.2(b)(2), including FEMA's proposed resolution of the dispute. Within thirty (30) calendar days after receipt of all pertinent documentation, the ACHP will either:

   i. Advise FEMA that it concurs with FEMA's resolution to the dispute.

   ii. Provide FEMA with recommendations, which FEMA will take consider in reaching a final decision regarding the dispute; or

   iii. Notify FEMA that it will comment pursuant to 36 CFR § 800.7(c). Any comment provided will be taken into consideration by FEMA in

accordance with 36 CFR § 800.7(c)(4) with reference to the subject of the dispute.

C. Any recommendation or comment provided by the ACHP will be understood to pertain only to the subject of the dispute, and FEMA's responsibility to fulfill all actions that are not subject of the dispute will remain unchanged.

D. If the ACHP does not provide comments regarding the dispute within 30 days after receipt of adequate documentation, FEMA may render a decision regarding the dispute. In reaching its decision, FEMA will take into account all comments regarding the dispute from the parties to the MOA.

E. Failure to fulfill the terms of this MOA requires that FEMA again request the ACHP's comments in accordance with 36 CFR § 800.6(c)(8). If FEMA cannot fulfill the terms of this MOA, it shall not take or sanction any action or make any irreversible commitment that would result in an adverse effect with respect to eligible or listed historic properties covered by this MOA or that would foreclose the ACHP's consideration of modifications or alternatives to the Undertaking that could avoid or mitigate the adverse effect until the comment process has been completed.

V. Amendments and Non-compliance

If any of the signatories to this MOA believe that the terms of the MOA cannot be adhered to, or that an amendment to the terms of this MOA must be made, that signatory shall immediately consult with the other signatories to develop amendments to this MOA. The process of amending this MOA shall be the same as that exercised in creating the original MOA. If an amendment cannot be agreed upon, the dispute resolution process set forth in Stipulation IV will be followed.

VI. Anticipatory Actions

A. FEMA shall not grant assistance to the Applicant should it, or those acting on its behalf, engage in anticipatory actions with the intent to avoid the requirements of

this MOA or Section 106 of NHPA that significantly adversely effects an historic property to which the assistance would relate or, having legal power to prevent it, allow such significant adverse effect to occur.

B. After consultation with the SHPO and ACHP, however, FEMA may determine that circumstances justify granting such assistance despite the adverse effect created or permitted by the Applicant and shall complete consultation for the Undertaking.

VII. Termination of Agreement

A. If any signatory or invited signatory to this MOA determines that its terms will not or cannot be carried out, that party shall immediately consult with the other parties to attempt to develop an amendment per Stipulation V above.

B. If within thirty (30) days an amendment cannot be reached, any signatory may terminate the MOA upon written notification to the other signatories. Once the MOA is terminated, and prior to work continuing on the Undertaking, FEMA must either (a) execute an MOA pursuant to 36 CFR § 800.6 or (b) request, take into account, and respond to the comments of the Council under 36 CFR § 800.7. FEMA shall notify the signatories as to the course of action it will pursue.

VIII. Execution of the Memorandum of Agreement

Execution of this MOA by FEMA and implementation of its terms are evidence that FEMA has taken into account the effects of the Undertaking on historic properties, and that FEMA has satisfied its responsibilities under the NHPA and its implementing regulations.

This MOA may be executed in parts, with a separate page for each signatory, and FEMA will ensure that each party is provided with a copy of the fully executed MOA. This MOA will become effective on the date that the signed MOA is received by the ACHP.